

Operating Instructions

PrograMill®
Dry

Milling

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1 About this documentation

These Operating Instructions will introduce you to the features of PrograMill® Dry.

PrograMill Dry is a modern 5-axis milling system for dental applications. The device is used for the manufacture of dental restorations using a CAD/CAM process from zirconium oxide, wax and PMMA.

The device was developed and produced according to the latest technology.

However, improper handling may result in hazards. Please observe the relevant instructions and read the Operating Instructions carefully.

The Operating Instructions are part of the device and are valid for all specified device versions.

The Operating Instructions describe the safe and proper use in all operating phases.

In case of loss, the Operating Instructions can be downloaded at www.ivoclar.com.



If you have any technical questions, please contact your authorised service partner.

1.1 User Interface Guidance

The PrograMill Dry supports all activities using information in the user interface. This information includes:

- Tutorials (videos) explaining how the device operates
- Support during set-up/commissioning
- Step-by-step instructions on required activities
- Overview of the milling process, e.g. processing time
- Starting and stopping the processing
- Notes on required unplanned interventions, e.g. in case of worn tools
- Troubleshooting



For all activities, refer to the information that your device displays in the user interface and also refer to the information in this manual.

Further information on the display and operating concept can be found in the chapter 6.

1.2 Target groups

Target group	Tasks
Operator	<ul style="list-style-type: none">• Keep these Operating Instructions available at the site of operation of the device, including for future use.• Users must read and observe the information in the user interface, this operating manual and the applicable documents, in particular the safety and warning notices (see chapter 2).• Observe additional device-specific provisions and regulations.
Dental technician	<ul style="list-style-type: none">• Read and observe this operating manual, the information in the user interface and the applicable documents, in particular the safety and warning notices (see chapter 2).
Dental professionals	
CNC technicians	
Service partners authorised by Ivoclar	

1.3 Symbols and means of representation

1.3.1 Warnings

These Operating Instructions use warnings to alert you about the risk of property damage and personal injury.

1. Always read and observe these warnings.
2. Follow all actions labelled with the warning symbol and warning word.

The following warning levels are differentiated depending on the severity and probability of the hazard:

Warning symbol	Warning word	Hazard level	Consequences of non-compliance
	DANGER	Immediately imminent danger	Death, severe bodily injury
	WARNING	Possible imminent danger	Death, severe bodily injury

Warning symbol	Warning word	Hazard level	Consequences of non-compliance
	CAUTION	Possible imminent danger	Slight bodily injury
	NOTICE	Possible imminent danger	Property damage

Explanation of the structure of a warning:

WARNING

Naming the source of the hazard, cause of the hazard or type of hazard.

Consequences of non-compliance with instructions.

- Action to avoid the hazard.

Example of a warning:

WARNING

Risk of injury from heavy lifting.

Back injuries due to overexertion.

- The device may only be lifted using the lifting truck.
- Do not unpack the device until after transport.

1.3.2 Symbols and means of representation

Symbol	Meaning
	Additional information, e.g. for better understanding, to facilitate work processes or for further information
	Prerequisite that you must fulfil before the following actions can be carried out
	Individual action steps that you must perform
1., 2.	Several action steps that you must perform in the specified order
	Statement of the result of an action step or several action steps, for success monitoring

1.4 Abbreviations

Abbreviation	Meaning
CAD	Computer-aided design. Describes the use of software to support design tasks for the manufacture of a product.
CAM	Computer-aided manufacturing. Describes the use of software independent of the CNC machine to create NC code for processing milling jobs on the milling machine.
CNC	Computerised numerical control. Describes an electronic method for controlling machine tools (CNC machines).
EMC	Electromagnetic compatibility Describes the absence of interference between electrical or electronic devices and their environment.
RCD	Residual current device/residual current circuit breaker
LAN	Local Area Network
NC	Numerical Control, numerische Steuerung. An NC file contains numerical control commands for the milling machine and thus defines milling paths.
PMMA	Polymethyl methacrylate
RFID	Radio Frequency Identification Describes a method for identifying discs by the milling machine.

1.5 Related documents



You can obtain information about the other applicable documents from your local sales partner or from the Ivoclar download area at: www.ivoclar.com.

Document	Explanation
Checklist for PrograMill Dry	Information on requirements that must be observed for transport, commissioning and use of PrograMill Dry
Cleaning checklist for PrograMill Dry	Information on proper cleaning
Documentation of the tools used	See chapter 13.4

2 Safety

WARNING

Improper use of the device.

Risk to the patient and the user.

- The Safety chapter contains important information about the safety of the device:
Read this chapter thoroughly before commissioning and operation.

-
-  The device is manufactured in accordance with current industry standards and recognised safety regulations. Nevertheless, its use poses a risk of injury to the user or other people. In addition, damage to the device and other property is possible.

2.1 Intended use

PrograMill Dry is designed for light to medium milling and grinding work in dry operation in the field of dental technology. Use the PrograMill Dry exclusively for this purpose.

Any liability and warranty claims shall lapse in the event of damage caused by improper operation or improper use.

Please note that only manufacturing routines, materials and milling strategies approved by the manufacturer can ensure gentle processing of the device.

The machine is designed for processing the following materials:

- Zirconium oxide (IPS e.max® ZirCAD)
- PMMA materials (Ivotion, Ivotion Base, Ivotion Dent, Ivotion Dent Multi, Telio® CAD, ProArt CAD Splint, ProArt CAD Try-In)
- Waxes (ProArt CAD)

-  Only approved discs can be identified by the device via an RFID chip on the disc (RFID label or RFID container on the disc holder) and therefore used, ensuring that misuse is virtually excluded.

In principle, all Ivoclar materials and tools are suitable in the corresponding categories.

Extensions to materials and manufacturing options may have been updated since the time of printing. For more information, please visit: <http://www.ivoclar.com>.

The processing of third-party materials or the use of third-party tools is not recommended due to the lack of coordination in the milling strategies and tool matching.

2.1.1 Potential misuse

The device is not suitable for milling operations outside of dentistry.

Misuse of the system includes:

- Non-compliance with the intended use, the specifications for the intended user and the intended environment
- Performing changes, maintenance or repairs without approval from Ivoclar
- Operation with unsuitable parameters

Improper use of the device can cause:

- Hazards for operating personnel
- Impaired operation of the device

Ivoclar assumes no liability for damages caused by misuse.

Typical improper use of the device that you must avoid:

Misuse	Possible consequences
Use of unapproved materials or tools	Unit cannot perform milling jobs
Incorrect/insufficient cleaning	Damage to the device
User switching the device off during milling	Damage to the tool. Possible calibration required

2.1.2 Intended users

The device may only be used by dental technicians, dental specialists and CNC technicians who have received training on how to use the equipment.

Service work may only be carried out by persons with expertise and experience in the field of "electrics".

It is the responsibility of the user to select the correct device settings.

2.1.3 Intended environment

The device is only approved for use in enclosed spaces, within the specified environmental conditions (see chapter 12.3.2) and in compliance with the specifications for safe installation (see chapter 4.1).

A small amount of ozone and nitrogen oxide is produced during operation, which is why ventilation is required in enclosed spaces.

2.2 Obligations of the operator

The operator is responsible for the safe operation of the device.

- ▶ Ensure compliance with and monitoring of:
 - intended use
 - statutory or other safety and accident prevention regulations
- ▶ Operate the device only when it is in technically perfect condition and only for its intended use, with safety and hazard awareness, and in compliance with the information in the user interface and this manual.

- ▶ Keep these instructions and all other applicable documents complete and legible and store them in a place that is accessible to personnel at all times.
- ▶ Ensure that personnel follow the instructions in the user interface and also observe the printed information.

2.2.1 Personnel qualification

- ▶ Ensure that personnel tasked with activities on the device have read and understood these instructions and all other applicable documents before starting work, in particular the safety, maintenance and repair information.
- ▶ Ensure that personnel are informed about hazardous areas and safety equipment (see chapter 2.5).
- ▶ Define responsibilities, authorisation and monitoring of personnel.
- ▶ Have all work carried out exclusively by technical specialists.
- ▶ Have service work carried out only by personnel with expertise and experience in the field of "electrics".
- ▶ Only allow personnel in need of training to carry out work on the device while under the supervision of technical specialists.

2.3 Personnel obligations

- ▶ Only operate the device in a technically perfect condition and in a safety- and hazard-conscious manner in compliance with these instructions.
- ▶ Refrain from working in any way that endangers personnel or third parties.
- ▶ In the event of a safety-relevant fault, switch off the device immediately and have the fault eliminated by an authorised service partner.
- ▶ In any case of doubt regarding the safety of the device, switch off the device and prevent further use.
- ▶ In addition to the overall documentation, comply with the statutory or other safety and accident prevention regulations as well as the applicable standards and guidelines of the respective operating country.
- ▶ Do not wear jewellery (such as rings, bracelets or watches) when working on the device, especially when cleaning in the milling chamber. Risk of crushing or cuts.

2.4 Personal protective equipment (PPE)

- ▶ If loud working noise cannot be avoided (sound level $\geq 80\text{dB(A)}$), use hearing protection during processing.
- ▶ Wear a protective mask (half mask with protection class FFP3) during cleaning work to protect against milling dust, milling vapours or other particles from dental materials.
- ▶ Wear standard commercially available gloves when performing cleaning tasks.

2.5 Work areas, hazards and safety equipment on the device

This is a state-of-the-art device designed in accordance with recognised technical safety rules. Hazardous areas that cannot be avoided by design are equipped with appropriate protective equipment. Nevertheless, through improper use of the device, the user or other people may be exposed to danger to life and risk of injury. Damage to the device, tools or workpieces may also occur.

During cleaning work, users need access to the work area of the device (milling room). When the door to the milling chamber is open, a safety contact stops all potentially dangerous components.

2.6 Safety instructions for potentially hazardous areas

2.6.1 Electromagnetic waves

Despite compliance with applicable standards, it is possible that the device may react to radio interference or affect the operation of devices in its immediate vicinity.

- ▶ Do not use devices that generate electromagnetic waves in the same room as the device.
- ▶ Take appropriate corrective measures in the event of radio interference, e. g. repositioning, rearranging the device or a shield.
- ▶ Only use the original accessories recommended and supplied by the manufacturer. Otherwise, increased electromagnetic emissions may occur or the device's immunity to interference may be reduced.

2.6.2 Interference

This device complies with Part 15 of the FCC Guidelines.

Changes or modifications that have not been expressly approved by the party responsible for regulatory compliance may result in the user losing the authorisation to operate the device.

Operation is subject to the following conditions:

- This device must not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

2.6.3 Mechanics

During operation, the following hazards exist in the milling chamber:

- Risk of crushing
- Risk of cuts from tools
- Danger due to flying milling chips
- Risk of damage to the device
- ▶ Never remove the housing and door to the milling chamber to prevent injuries or for cooling and fire protection reasons.
- ▶ Operate the device only with the door closed to the milling chamber.

- ▶ Do not bypass or disable safety devices, in particular the door to the milling chamber.
- ▶ Only reach into the milling chamber for the work described in this document and under the specified conditions.

2.6.4 Sound emission

Sound emission varies greatly depending on the materials used and the milling conditions (see chapter 12.1).

In the case of increased noise emissions that can cause damage to hearing:

- ▶ Perform visual inspection of the disc.
- ▶ Check the fixing of the disc in the disc holder.

2.6.5 Electrical safety

If housing is opened or parts that are only accessible with tools are removed, live components may be exposed. Plugs can also be live. There is a risk of electric shock.

- ▶ Have work performed on the electrics exclusively by the authorised service partner.
- ▶ Before connecting the device, check that the supply voltage and the supply frequency are correct at the machine location (see chapter 12.4 and the specifications on the rating plate, chapter 3.2).
- ▶ To avoid injury to users, and for cooling and fire protection reasons, never remove housing.
- ▶ Observe the manufacturer's specifications for home installation during installation (see chapter 1.5).
- ▶ To avoid the risk of electric shock, connect the device only to a supply network with protective conductor.
- ▶ Do not reach into the connections on the device and do not manipulate them.
- ▶ The mains plug serves as a mains isolator. Connect the mains plug only to an easily accessible protective contact socket.
- ▶ Secure cables against damage from heat, moisture, oil, sharp edges, pressure and crushing. In the event of damaged cables, use only original replacement cables.
- ▶ Connect the device and the suction unit to an earthed and freely accessible protective contact socket, each in a separately secured circuit, and ensure that no devices are connected that cause strong fluctuations in mains voltage when switched on. These fluctuations interfere with the control electronics and can cause a system failure.
- ▶ Ensure that the earthed contact socket is equipped with a residual-current circuit breaker (RCD).
- ▶ If you need to disconnect the device from the power supply at a later time: Disconnect the plug from the protective contact socket of the mains, not on the device.

2.6.6 Data security

Connecting a malware-infected USB-C device is a risk to the device's data and operational security. The software is regularly checked for potential hazards and security gaps and continuously updated.

- ▶ Check USB-C devices on a separate PC with appropriate antivirus software before connecting them to the device.
- ▶ Keep device software up to date at all times.

2.6.7 Pneumatics



Ivoclar recommends the use of a pre-filter if there is uncertainty about the quality of the compressed air used.

The pneumatic components of the device are under high pressure. Sudden compressed air escaping through leaking lines and connections or swirling tubes can cause serious injuries and hearing damage.

- ▶ Ensure that only personnel with additional pneumatic training perform work on pneumatic components.
- ▶ Ensure that the compressed air supply meets the required system specification. Do not exceed the maximum permissible pressure.
- ▶ Ensure that the compressed air is clean, oil-free and dry.
- ▶ Have pneumatic components checked regularly.
- ▶ Immediately arrange for the defects, e.g. loose connections or damaged lines, to be remedied.

Before working on the pneumatics:

- ▶ Close the main shut-off valve.
- ▶ Switch off the device.
- ▶ Before opening or removing a line, turn off/disconnect the compressed air supply.

2.6.8 Hazardous materials (milling material)

Without appropriate safety precautions in place, there is a risk of respiratory diseases due to inhalation of dangerous milling residues (dust, chips) or emissions during operation, depending on the material of the discs being processed.

- ▶ Operate the device only with the suction switched on.
- ▶ Only use discs that do not pose a health risk when suction is functioning correctly.
- ▶ Operate the extraction system only with the filter specified by the manufacturer.

2.7 Safety instructions for individual operating phases

2.7.1 Transport

- ▶ Only transport the device according to the description in these Operating Instructions (see Chapter 4).
- ▶ To prevent corrosion and associated damage to the device, transport and store the device only within the permissible temperatures and environmental conditions (see Chapter 12.3).
- ▶ Observe the transport safety instructions (see chapter 5.2.3). Risk of damage to the milling mechanism.

2.7.2 Commissioning

- ▶ Ensure that the device is only commissioned by trained personnel.
- ▶ If the device has been stored in very cold conditions or high humidity, allow a drying or Adhere to temperature adjustment time of approx. 4 hours.
- ▶ Before connecting the device, check that the supply voltage and the supply frequency are correct at the machine location (see chapter 12.4).

- ▶ Before connecting the device, check that the conditions for connection to the compressed air supply are met at the installation site (see chapter 12.5).
- ▶ Comply with specifications for the machine location (see chapter 4.1) and the environmental conditions (see chapter 12.3.2).

2.7.3 Operation

- ▶ Keep unauthorised persons, children and animals away from the device.
- ▶ In any case of doubt regarding safety, disconnect the device from the mains and take appropriate measures to prevent further use.
- ▶ Check device, accessories and protective devices before commissioning or operation for any damage.
- ▶ Cease use of any damaged, non-functional equipment or accessories, and notify an authorised service partner.
- ▶ To ensure product safety and preserve the warranty, operate the device exclusively with original accessories from Ivoclar. The use of unapproved accessories takes place at the user's own risk.
- ▶ Only use approved materials with regard to process safety and on the recommendation of Ivoclar.
- ▶ Operate the device only with the milling chamber closed and connected extraction system.
- ▶ Do not bypass or disable the device's existing safety devices (see chapter 2.6).
- ▶ To avoid damaging the device and reducing its performance, observe cleaning specifications and intervals (see chapter 2.7.4 and chapter 9).

Unattended operation

The device may be operated unattended, provided that national and local laws and regulations permit this and are complied with. Furthermore, the requirements of the respective insurance company must be met.

The following conditions must be met for unattended operation:

- ▶ Never use the device with a heavily soiled milling chamber.
- ▶ Protect the device against interference by unauthorised persons.
- ▶ Ensure that the room in which the device is operated has an automatic fire alarm system.

Persons with pacemakers or pacemaker electrodes

During operation, electromedical devices may malfunction. Persons with pacemakers or pacemaker electrodes are exposed to the following hazards:

- Pacemaker malfunction
- Damage to the pacemaker
- ▶ If in doubt, contact a cardiologist.

2.7.4 Cleaning by the user

- ▶ Only carry out the cleaning work expressly specified in these Operating Instructions and observe the associated safety regulations (see chapter 9).

2.7.5 Improper maintenance, modifications and repairs

Improper service and improper repairs or modifications put users at risk and cause damage to the device.

If you repair, service or modify the device or remove the housing without the prior written permission of an authorised service partner, any warranty claims will be void (exception: training with Ivoclar).

Unauthorised opening and removal of components can cause live components to be exposed. Plugs can also be live. There is a risk of electric shock.

- Have maintenance and repairs performed on damaged safety devices or device parts only by a service partner authorised by Ivoclar.

3 Structure and function

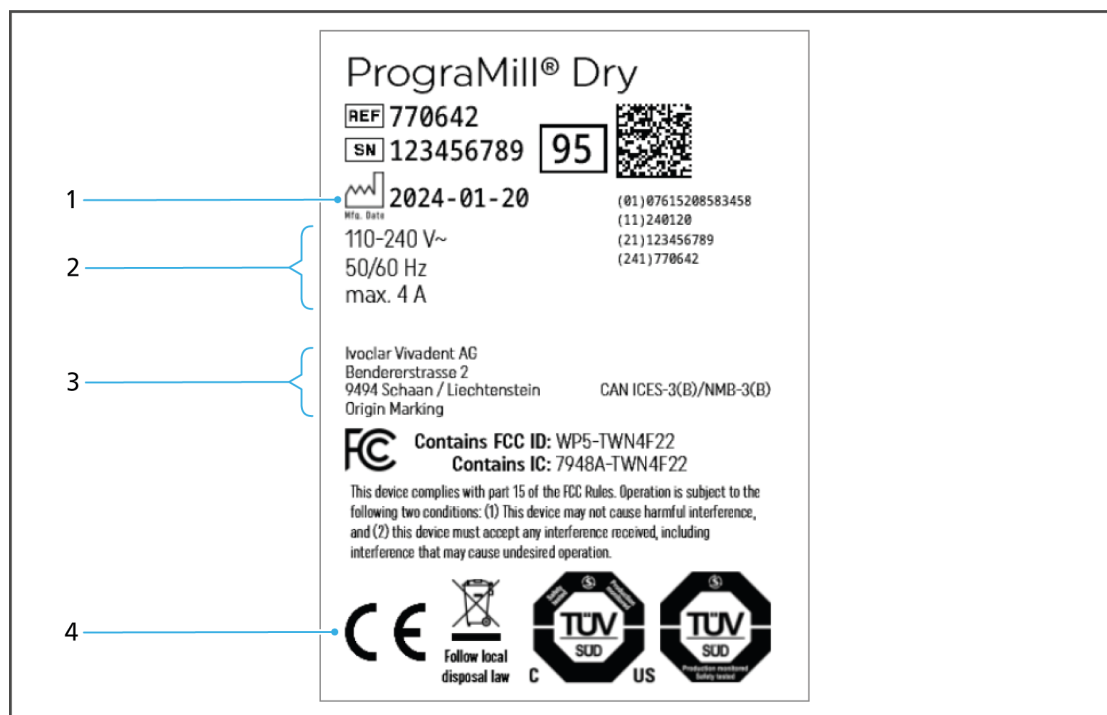
3.1 PrograMill Dry

The PrograMill Dry milling machine is a modern 5-axis milling system for milling dental restorations in dry operation. The system is designed to process various materials. Electronics with specific software control the milling process.

3.2 Marking and labelling the PrograMill milling machine

The device is labelled on the front with the product name PrograMill Dry and the Ivoclar Digital Logo.

The back of the device is supplemented by a rating plate (example illustration):



No.	Description
1	Date of manufacture in format YYYY-MM-DD
2	Permissible supply voltage, supply frequency and supply current (country-dependent)
3	Manufacturer
4	The device complies with the applicable EU directives

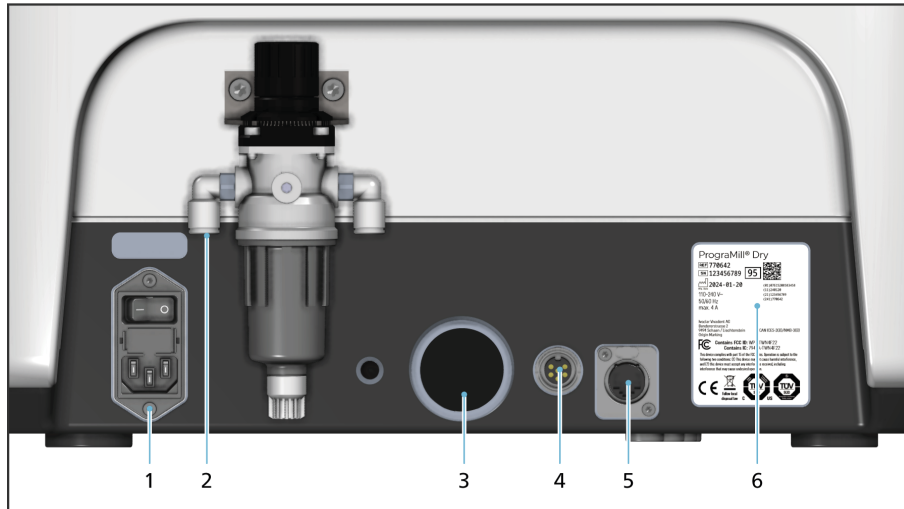
3.3 Structure

3.3.1 Front



No.	Description	Function
1	Display (Touchscreen)	<ul style="list-style-type: none">• Display of device status and information• Control of the milling process and input of information• See chapter 6
2	RFID scanner	Identification of the discs via RFID label
3	Milling chamber	See chapter 3.3.4

3.3.2 Back



No.	Description	Function
1	Mains connection with on/off switch	<ul style="list-style-type: none"> Power supply to the device Switching the device on and off
2	Compressed air connection	Supply of compressed air to the device
3	Connection of the extraction system	Connection of an external extraction system, e.g. B. Renfert Suction Unit
4	Electrical connection of the extraction system	Connection of a data cable to automatically switch the external extraction system on and off
5	LAN connection	Connection to the local network
6	Type plate	See chapter 3.2

3.3.3 Left side

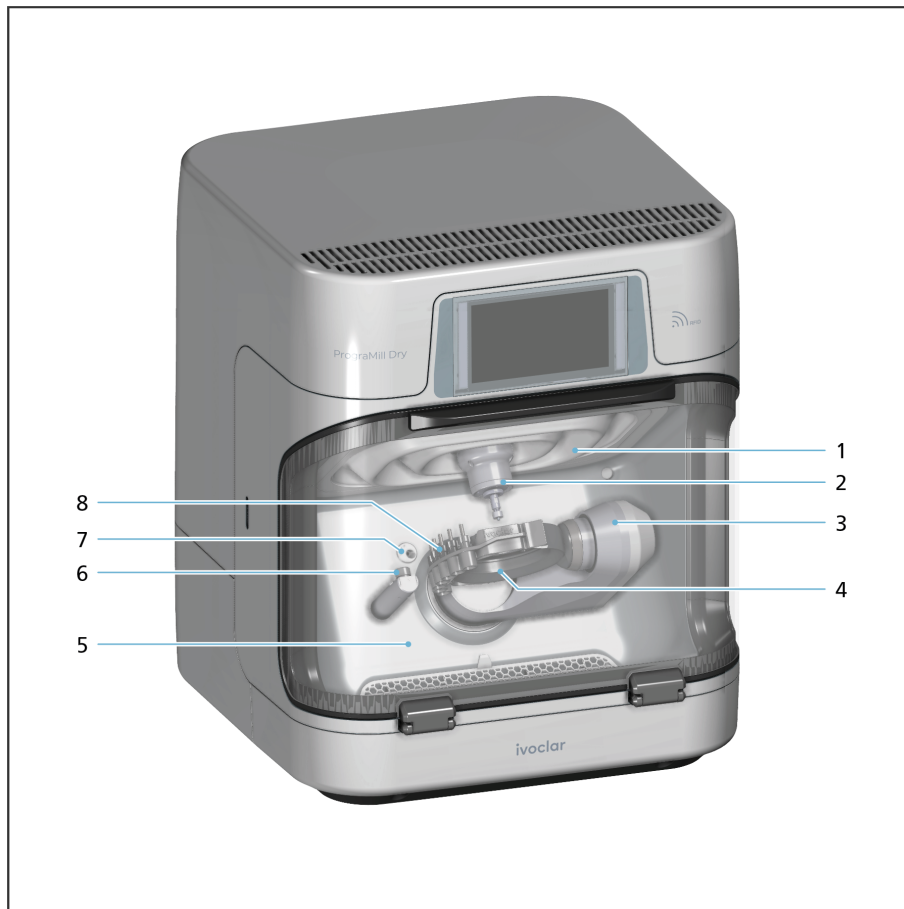


The term "left" refers to the view from the front.



No.	Description	Function
1	USB-C port	Connection of an external storage device with USB-C interface

3.3.4 Milling chamber

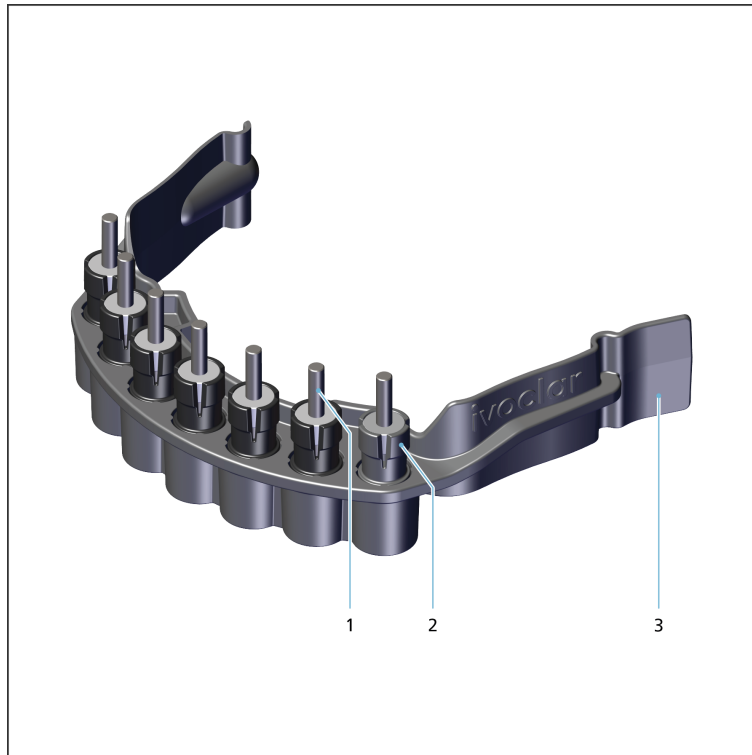


No.	Description	Function
1	Membrane	Protection of the axle mechanics against contamination and dust
2	Spindle	Addition of the tool from the tool magazine for processing the work-piece (linear movement of the tool into the X, Y and Z axis)
3	Milling arm	Rotary movement of the disc holder with the inserted disc into the A and B axis
4	Windscreen holder	Mounting of the discs/workpieces
5	Door to the milling chamber	Sealing of the milling chamber
6	Measuring probe	Inspection of tools, e.g. length, breakage
7	Ioniser	Neutralising loaded PMMA chips
8	Tool magazine	Mounting of the tools for processing the workpiece

3.4 Tool magazine with tools

A tool magazine in the milling chamber receives the tools required for a milling job. The tool magazine is placed on the disc inserted in the disc holder. The tool magazines are labelled for the different materials:

- PMMA: green
- Zirconium oxide: yellow
- Wax: black



No.	Description	Function
1	Tool	Production of the desired contour from the workpiece
2	Tool clamping sleeve	Tool holder
3	Clip fastening	Attaching the tool magazine to the disc holder

4 Transport and installation

4.1 Selecting the machine location

- ▶ Observe technical specifications for the place of use and installation location (see chapter 1.5, checklist for PrograMill Dry).
- ▶ Observe network specifications (see chapter 1.5, checklist for PrograMill Dry).
- ▶ Do not use the device in rooms with flammable anaesthetics or other flammable gases and substances.
- ▶ Do not install and operate the device in explosive atmospheres.
- ▶ To prevent overheating or corrosion on the device, operate the device only within the permissible temperatures and environmental conditions (see Chapter 12.3.2).
- ▶ Protect the device from moisture and heat (direct sunlight, radiators or other heat sources).
- ▶ Operate the device in the most dust-free environment possible, because ambient air is sucked in and the filter clogs up more quickly in a dusty environment.
- ▶ Place the device on a stable, level, non-slip and clean work surface (load-bearing capacity > 200 kg). Please note: the feet on the device can leave marks on delicate surfaces.
- ▶ Ensure sufficient space under the device for safe transport of the device on a lifting truck and for storing the accessories.
- ▶ Ensure device free-standing and easily accessible during operation.
 - A. Do not install devices in cabinets or on shelves.
 - B. Do not operate the device while it is stacked on or under other devices.
 - C. Maintain distance from other devices.
- ▶ Maintain sufficient distance on all sides of the device to ensure easy access to the machine connections and especially the on/off switch.
- ▶ Danger of tripping and falling! Avoid clutter at the workplace, keep the workplace clean, and store cables and peripheral equipment securely.
- ▶ Avoid continuous unilateral strain, set up the workplace ergonomically, and consider optimum seat height, device position and lighting.

4.2 Transporting the device to the installation site

WARNING

Risk of injury from the device tipping over or falling.

- Crushing of limbs.
- Damage to the device.
- ▶ Only use suitable transportation methods (e.g. pallet trucks with > 100 kg load-bearing capacity).
- ▶ Use suitable transport restraints to secure the device against falling (e.g. tension straps).
- ▶ Avoid impacts, vibrations and jerky movements during transport.
- ▶ Do not stand under raised loads.

WARNING

Risk of injury from heavy lifting.

Back injuries due to overexertion.

- ▶ The device must be lifted by two people (weight of milling machine approx. 50 kg).
- ▶ Transport the device in its original packaging to the designated site of operation using the means of transport.



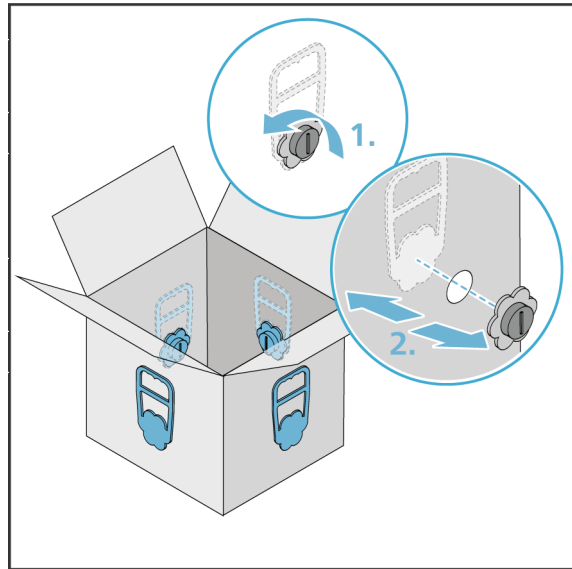
4.3 Unpacking the device



Ivoclar recommends retaining the packaging for possible service work and proper transport.

Dispose of packaging that is no longer required in an environmentally responsible manner in accordance with local regulations.

1. Open the packaging.
2. Remove the accessories box using the handle recess.
3. Remove foam corners.
4. Open the heavy-duty handles (4 pcs.). To do this, turn the internal nut counterclockwise (1).
5. Remove the heavy-duty handles (2).
6. Lift the box.
7. Open the bag.



4.3.1 Checking the condition and scope of delivery



Please note: there may be residual dirt in the milling chamber due to machine acceptance. This is not a product defect.

1. Unpack device at the site of use (see chapter 4.3).
2. Check scope of delivery for completeness (see chapter 13.2).
3. Check all components for transport damage.
4. Report any transport damage and missing components to the carrier immediately.

4.4 Positioning the device

WARNING

Risk of injury from the device tipping over or falling.

- Crushing of limbs.
- Damage to the device.
- ▶ Only use suitable transportation methods (e.g. pallet trucks with > 100 kg load-bearing capacity).
- ▶ Use suitable transport restraints to secure the device against falling (e.g. tension straps).
- ▶ Avoid impacts, vibrations and jerky movements during transport.
- ▶ Do not stand under raised loads.

WARNING

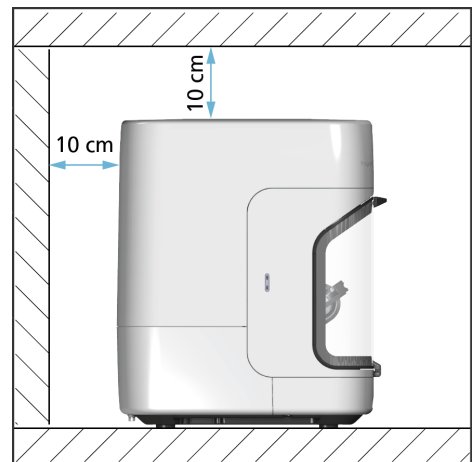
Risk of injury from heavy lifting.

Back injuries due to overexertion.

- ▶ The device must be lifted by two people (weight of milling machine approx. 50 kg).

- ✓ The installation space is selected (see chapter 4.1).
- ✓ The installation site is freely accessible.
- ✓ The device is unpacked (see chapter 4.3).

1. Using the carrying handles on the underside, two people should lift the machine and carry it to the installation site.
2. Maintain a minimum clearance of 10 cm around the device to prevent the ventilation openings from being blocked.
3. Position the device on the work surface so that all controls, components and connections are easily accessible.
4. Position the device so that it neither obstructs nor is obstructed by other devices.



5 Switching on the device and starting it up

5.1 Connecting the device to the power supply and switching it on

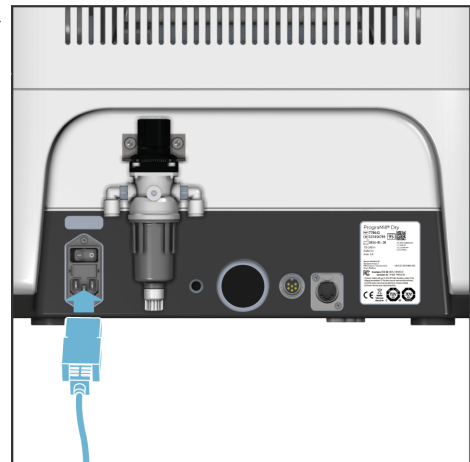


- Use only the supplied mains cable or an equivalent replacement mains cable from Ivoclar.
- To disconnect the device from the power supply at a later time, unplug it from the socket, not from the device.
- Every time the device is switched on, a self-test starts automatically.

✓ The power supply requirements have been met (see chapter 2.6.5 and rating plate, chapter 3.2).

1. Insert the mains cable into the mains connection of the device.
2. Connect the power cable to the mains socket.

Mains voltage is supplied to the device.

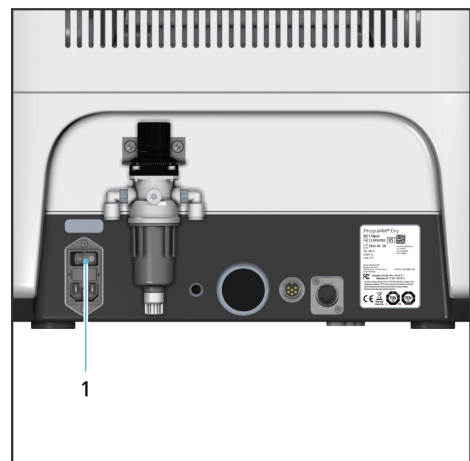


3. Switch on the device using the On/Off switch (1) on the rear of the device.

The Welcome screen [Ivoclar – Making People Smile] is displayed.

After startup, a self-test is performed automatically.

If the device is switched on for the first time, the commissioning procedure starts automatically (see chapter 5.2).



The self-test of the system takes several minutes.

4. If required: Confirm any warnings displayed during the self-test.

If the device was switched off with the milling chamber door open, the following warning is displayed: [Device was switched off with door open].

If the axes have been moved excessively since the device was switched off, the following warning is displayed: [Axes were moved].

5. Follow the instructions in the user interface to check and restore the device to a proper operating condition.

The safety pin is inserted.

The axes are in the correct position.

The self-test is performed.

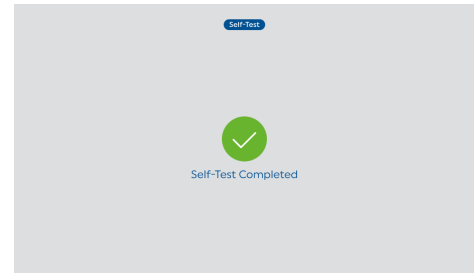
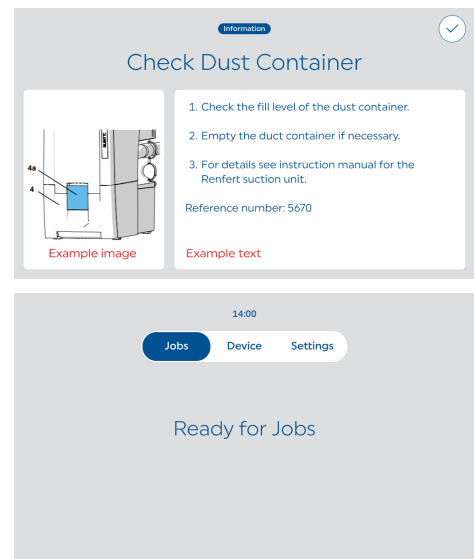
The message [Self-Test Completed] is displayed.

6. If required: Empty the dust container.
To do this, follow the instructions in the user interface.

The operating hours counter for the dust container replacement is reset.

The self-test is completed.

The readiness indicator is displayed in the user interface: [Ready for Jobs]



5.2 Starting up the device



- **Do not work alone while performing the tasks described below!**
- For information on the use in CAD-integrated systems, see the manufacturer's documentation (see chapter 1.5).
- For information on the "PrograMill CAM" software, please refer to the "PrograMill CAM" Operating Instructions (see chapter 1.5).
- Observe the information in this manual for all activities in addition to the information in the user interface.

Once turned on, the unit will help you to enter the information and associated operations required for operation through user interface information:

- Selecting language
- Removing the transport restraint
- Selecting and connecting extraction system
- Connecting the compressed air supply
- Preparing the tool magazine
- Establishing network connection
- Entering time and date
- Viewing privacy information and register device
- Selecting units

Switching on the device and starting it up

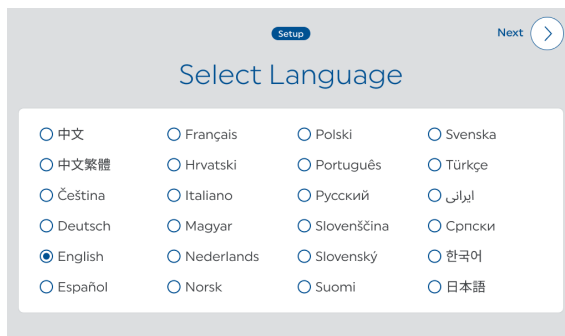
During commissioning, the message appears at the top centre of the screen highlighted in blue [Setup].



The settings [Settings] can be adjusted at any time via the menu at a later date.

5.2.1 Selecting language

1. Select language.
2. Continue with [Next].
The Z axis moves upwards.
The door to the milling chamber opens a gap.



5.2.2 Connecting the compressed air supply

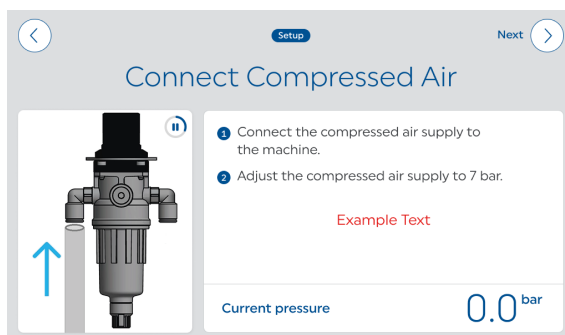


The device can only be operated with the compressed air supply connected. If compressed air is missing, an error message is displayed on the device.

CAUTION

- **Leaking lines and connections or whirling hoses due to improper installation.**
- Risk of serious injury and hearing loss.
- ▶ Observe safety instructions.
- ▶ Comply with compressed air supply requirements (see chapter 12.5).
- ▶ Ensure compressed air supply at the installation site.

1. Follow the information in the user interface to create the compressed air supply.
2. Set the supply pressure (current pressure) to 7 bar.
3. Continue with [Next].
The home screen [Prepare ... Tools] is displayed.



5.2.3 Removing the transport restraints



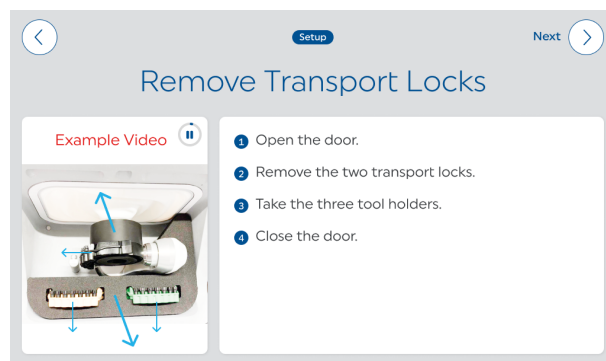
NOTICE

Using the device with built-in transport protection.

Damage to the milling arm.

- Have transport protection removed.

1. To remove the transport restraints follow the information in the user interface.
2. Remove accessories (axis lock, 3 tool magazines) from the milling chamber.
3. Continue with [Next].



Ivoclar recommends that you keep the transport restraints for possible service work and proper transport.

5.2.4 Selecting and connecting extraction system

You can operate the device either with the Renfert Suction Unit extraction system (recommended by Ivoclar), which can be ordered separately, or with another extraction system that meets the specifications (see chapter 1.5). The connection of the Renfert Suction Unit extraction system is described below.



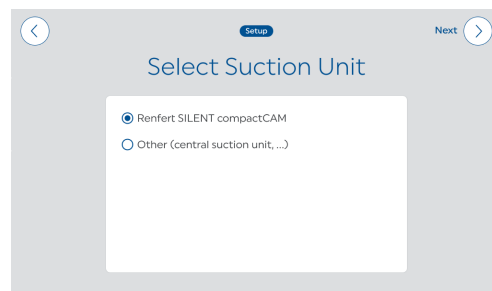
When installing and commissioning the extraction system, also observe the following operating instructions:

- Operating instructions for the Renfert Suction Unit (see chapter 1.5).
- Or: operating instructions from the manufacturer of the respective extraction system

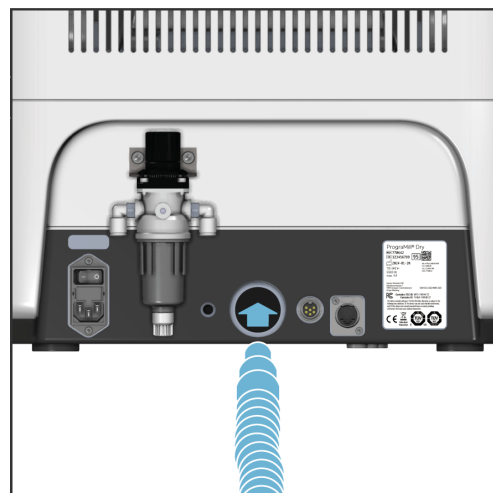
The connection is described below using the Renfert Suction Unit extraction system. Only use the control cable supplied with the Renfert Suction Unit extraction system and the hose supplied (2.5 m) or equivalent spare parts from Renfert. Use a suction hose with a 45 mm connection diameter or a suitable adapter (included with the extraction system). The hoses and hose connections are designed to prevent confusion caused by different diameters and connection pieces.

Switching on the device and starting it up

1. Select the extraction system and continue with [Next].
2. To connect the extraction system, follow the instructions in the user interface.
3. Continue with [Next].

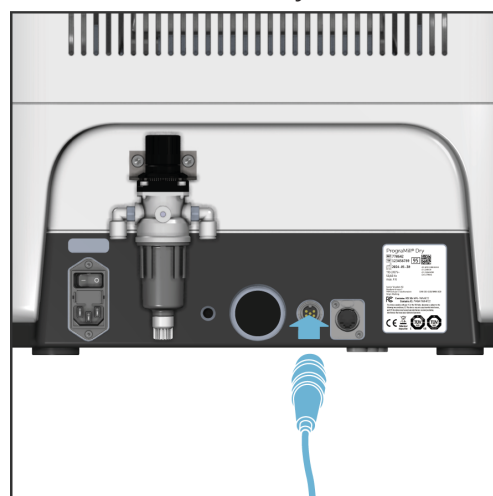


4. To connect the suction hose, follow the instructions in the user interface.
5. Make sure that the suction hose is tight.
6. Continue with [Next].



If the device is to switch the extraction system on and off automatically:

7. Connect the extraction system and the device using the data cable provided by the extraction system manufacturer.

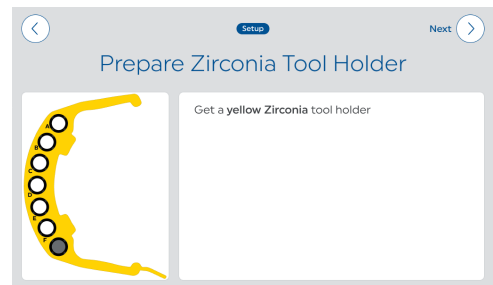


5.2.5 Preparing the tool magazine



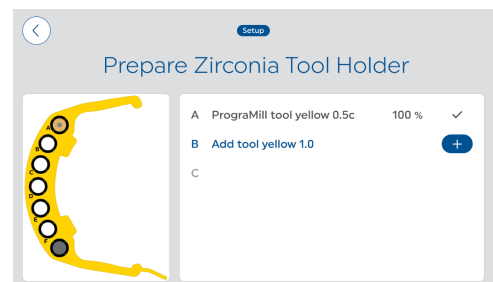
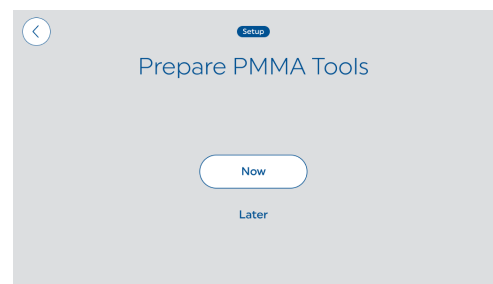
The procedure is identical for all tool materials – zirconium oxide, PMMA, wax.

1. Start tool preparation with [Now].
– or –
Move tool preparation [Later] to a later time.
2. To prepare the zirconium oxide tool magazine, follow the instructions in the user interface. Here:
 - A. After each step, continue with [Next].
 - B. Select tool with [+].
 - C. Use the slide switch to select whether the tool is coated or uncoated.



Coated tools are marked with a "c" in the user interface, e.g. B. [PrograMill Tool yellow 1.5c].

3. Continue with [Next].
The prepared tool is displayed with a "100%" status and a green tick.
In the user interface, the position in the tool magazine is shown as occupied by the tool (in the example, at the top).
The next tool to be inserted is marked with a "+" symbol.
4. Once the tool magazine is fully loaded: Use the top left arrow button to go back. The start screen for preparing the next tool magazine is displayed.
5. Prepare additional tools.



5.2.6 Establishing network connection

Your device supports Local Area Network (LAN). Use it to connect to the local network required to operate the device within the PrograMill system.

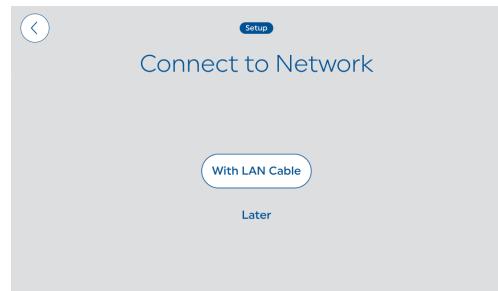
For easy and direct transfer of project data to the PrograMill Dry, your device uses the network connection via the LAN port. The Server Message Block (SMB) protocol is used, which makes it possible to provide data like in a normal folder on the network. The PrograMill Dry can thus access the required data directly.



- Only use the supplied patch cable or original spare part.
- Your in-house technician or network administrator can help you configure and use LAN connections.
- The device does not support Wi-Fi.

- ✓ The network requirements have been met (see chapter 1.5).
- ✓ The network connection is secured (building services).
- ✓ The internet connection is secured (building services).
- ✓ Communication between the devices in the PrograMill system and the associated CAM software "Ivoclar CAM" is ensured (sales partner or Digital Instructor/Master).

1. Confirm in the user interface [Connect to Network] with [With LAN Cable].
2. To connect the LAN cable, follow the instructions in the user interface.



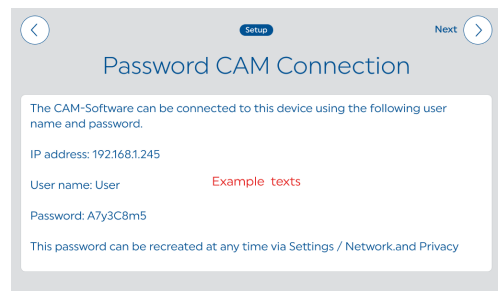
3. Wait until the network connection has been established.

The network connection is indicated by a green tick.

In the user interface, information about the password for CAM Connection is displayed.

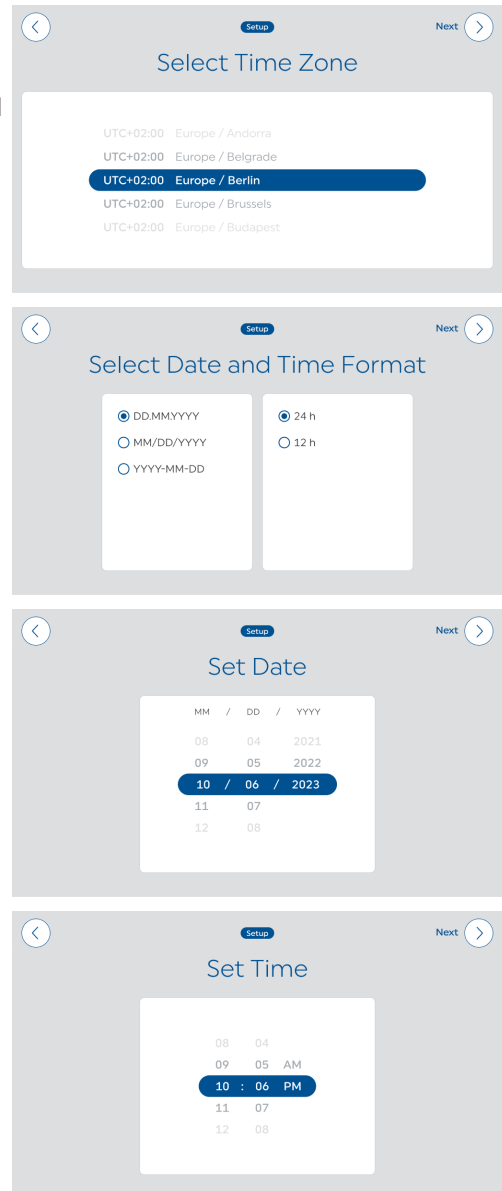
4. Continue with [Next].

[Select Time Zone] is displayed in the user interface.



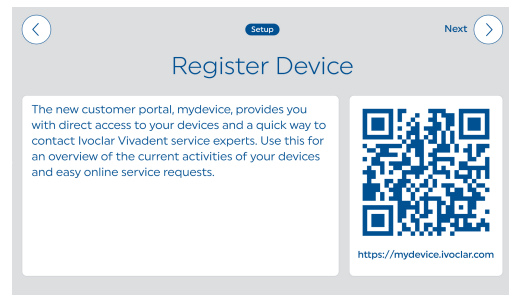
5.2.7 Entering time and date

1. Select time zone.
2. Continue with [Next].
[Select Date and Time Format] is displayed in the user interface.
3. Select display format for time and date.
The device is attempting to synchronise with a time server. If the synchronisation is successful, the following two steps are not displayed.
4. Continue with [Next].
[Set Date] is displayed in the user interface.
5. Enter date.
6. Continue with [Next].
[Set Time] is displayed in the user interface.
7. Enter time.
8. Continue with [Next].
In the user interface, information on data protection is displayed.



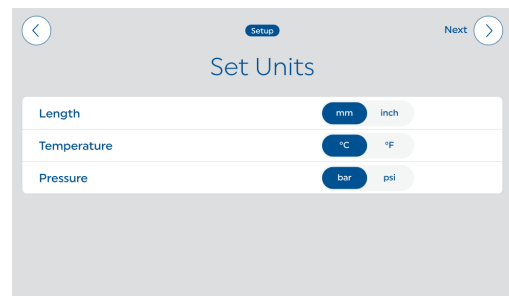
5.2.8 Viewing privacy information and registering the device

1. View data protection information via the QR code.
– or –
View data protection information at www.ivoclar.com/DPSMD
2. Continue with [Next].
3. Register the device using the QR code.
– or –
Register the device at <https://mydevice.ivoclar.com>.
4. Continue with [Next].
[Set Units] is displayed in the user interface.



5.2.9 Selecting units

1. Follow the information in the user interface to select the units.
 - A. Length (mm/inch)
 - B. Temperature (°C/°F)
 - C. Pressure (bar/pas)
2. Continue with [Next].
The start screen [Welcome to PrograMill Dry] is displayed in the user interface.



5.2.10 Tutorial Videos

- Tutorials familiarise you with the basic operation of the PrograMill Dry. Ivoclar recommends watching these tutorials before working with the device.
 - Tutorials can be displayed again at any time via the menu [Device] and the button [Tutorials].
- If preferred: Select a tutorial in the user interface to display:
- A. Run a milling job
 - B. Calibration, Cleaning, etc.
 - C. Settings

After completing a tutorial, the tutorial selection is displayed again. Tutorials can be viewed and repeated as often as required. After viewing for the first time, the [Play] button next to the tutorial name changes to a [Repeat] button.

6 Working with the user interface

The device is controlled exclusively via the corresponding user interface on the touch-screen.



Illustrations in this manual may differ slightly from those in the software version installed with your device.

6.1 Overview of the user interface

The user interface is made up of three menus:

- Menu [Jobs] – Display and execution of the milling jobs that the CAM system has transferred to PrograMill Dry
- Menu [Device] – Operating functions of the device
- Menu [Settings] – Display and change device settings

6.1.1 Menu [Jobs]

In the menu, the milling jobs [Jobs] are displayed on the PrograMill Dry. By default, the milling jobs are displayed in chronological order, in the order in which the jobs were transferred from the CAM software "Ivoclar CAM" to the PrograMill Dry: first milling job in first position, second milling job in second position, and so on.

All ongoing and pending milling jobs are displayed.

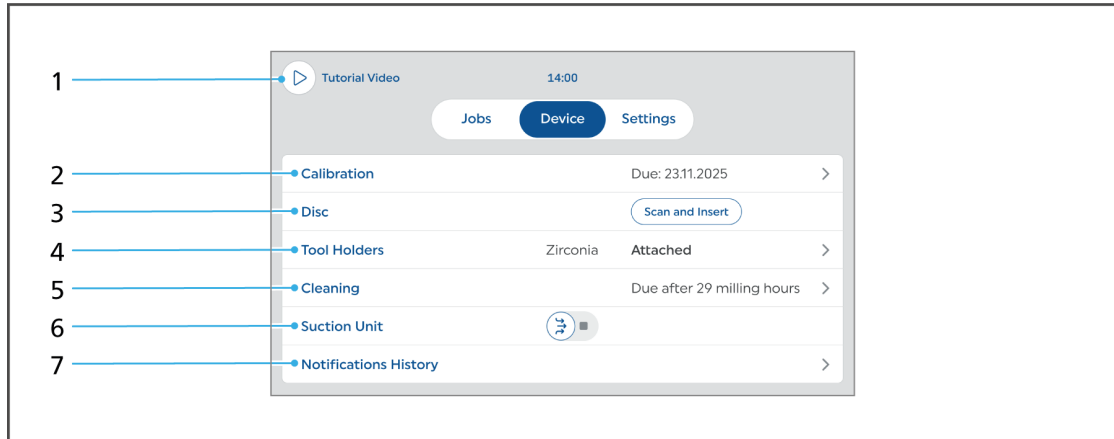
Tapping on a milling job displays the detailed view of the milling job (see chapter 6.2).



No.	Description	Function
1	Time	–
2	Menu bar	Switching between the menus
3	Milling jobs transferred by the CAM system	–
4	Position display (points) with leaf symbol	Show additional jobs if there are more than 4 jobs on the device

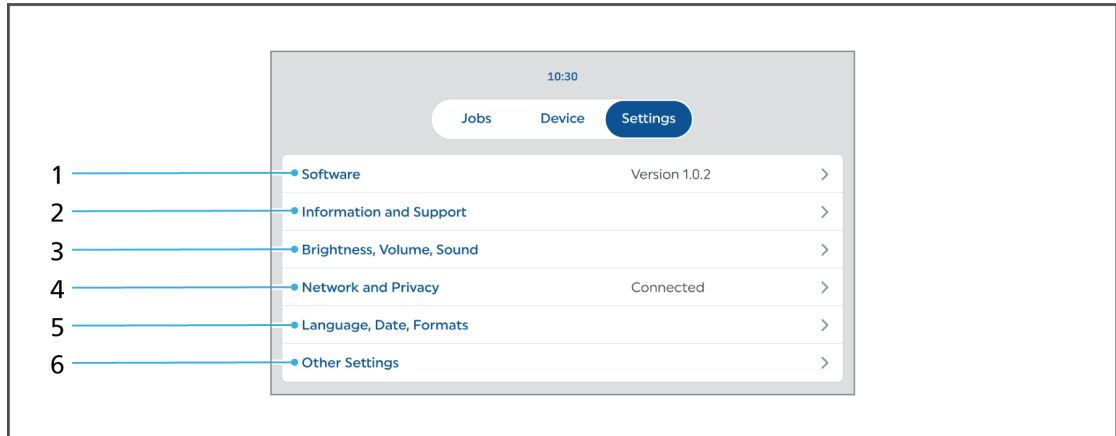
6.1.2 Menu [Device]

The menu [Device] is used to perform additional operational tasks on the PrograMill Dry and to display information about the operation.



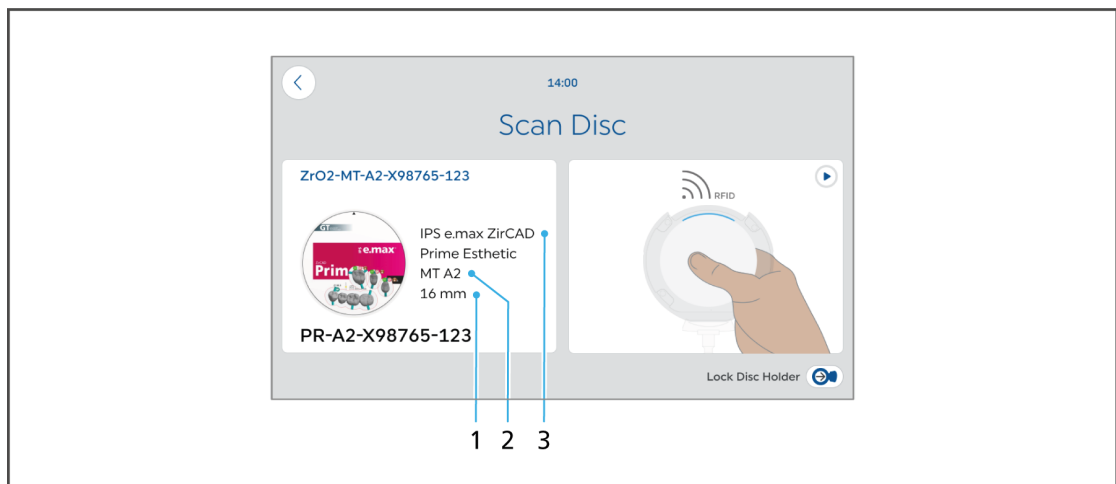
No.	Description	Function
1	Tutorial Videos	Play videos with more information
2	Calibration	To show the date by which the device needs to be calibrated
3	Disc	Identify, insert and change discs
4	Tool Holders	<ul style="list-style-type: none">• Display of the current tool magazine and the status• Changing the tool magazine
5	Cleaning	Shows the time until next scheduled cleaning
6	Suction Unit	Vacuum the milling chamber as needed
7	Notifications History	Viewing Message History

6.1.3 Menu [Settings]



No.	Description	Function
1	Software	Display of the current software version
2	Information and Support	Display of a QR code for contact addresses
3	Brightness, Volume, Sound	Setting UI brightness, volume and beeps
4	Network and Privacy	Display of the network connection
5	Language, Date, Formats	Set language, date, time, date and time format
6	Other Settings	Call up further setting options

6.2 Information on milling jobs



No.	Description	Function
1	Height	–
2	Colour	–
3	Material	–

7 Preparing and executing milling jobs

7.1 Overview



- Observe the information in this manual for all activities in addition to the information in the user interface.
- The device receives all information about the milling job to be performed from the CAM software.
- For a milling job to be carried out, the associated disc must be present and a suitable, fully equipped tool magazine must be available.
- The tool magazines are prepared for the first time during commissioning (see chapter 5.2.5).

The information in this chapter is grouped by the following topics:

- Switching on the device
- Tools and tool magazines
- Discs and disc holder
- Executing milling jobs
- Switching off the device

7.2 Switching on the device

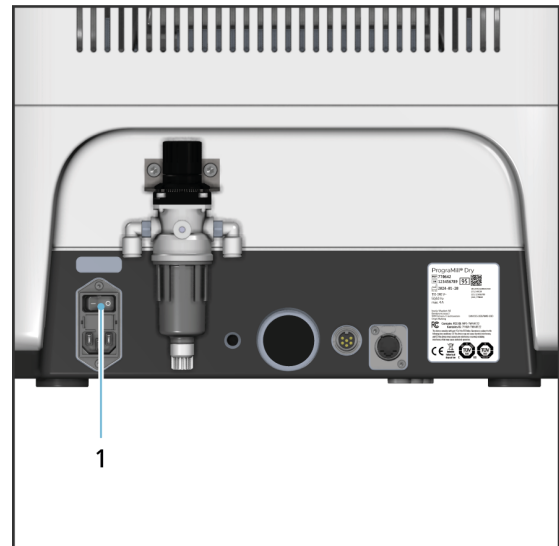


The process may take a little more time when starting up for the first time or after longer standby periods.

- Switch on the device using the On/Off switch (1) on the rear of the device.

The welcome screen [Ivoclar –Making People Smile] is displayed.

The device starts a self-test.



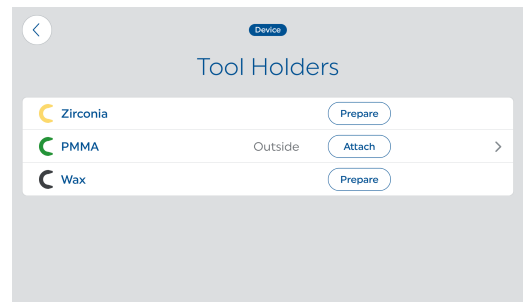
7.3 Tools and tool magazines

7.3.1 Inserting tools in the tool magazine

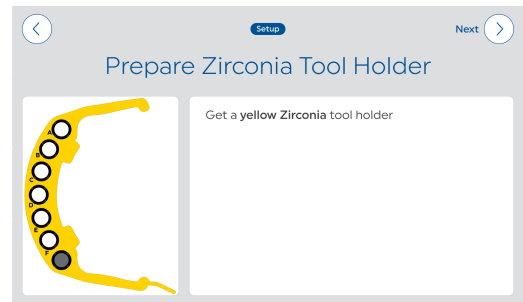
- ✓ The menu [Device] displays the overview [Tool Holders].
- ✓ The tool magazine matches the milling job, e. Zirconiumoxide: yellow

 The procedure is identical for all tool materials – zirconium oxide, PMMA, wax.

1. If required: Remove any existing tools from the slots.
2. Display the tool magazine with [Prepare].

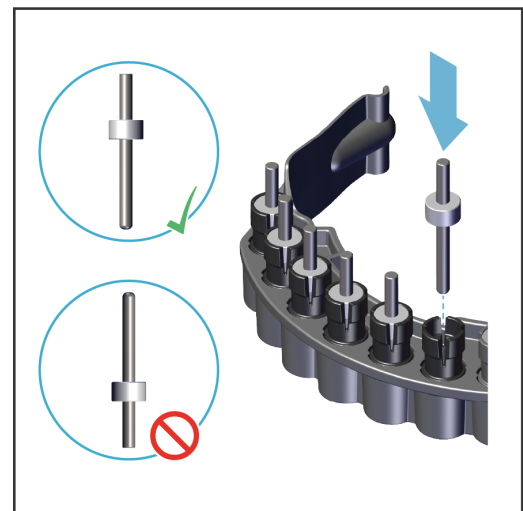


3. To insert the tools, follow the instructions in the user interface. Here:
 - A. After each step, continue with [Next].
 - B. Select the tool to be inserted with [+].
 - C. Use the slider to select whether the tool is coated or uncoated.

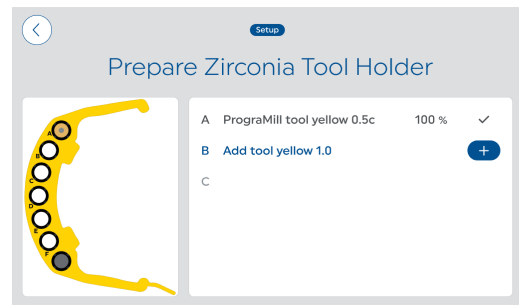


 Coated tools are marked with a "c" in the user interface, e.g. B. [PrograMill Tool yellow 1.5c].

4. Insert the tools vertically into the tool magazine as shown in the illustration.



- Continue with [Next].
The inserted tool is displayed with a "100%" status and a green tick.
In the user interface, the position in the tool magazine is shown as occupied by the tool (in the example, at the top).

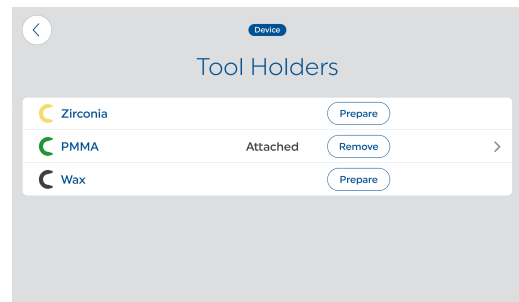


- Select the next tool to be inserted with [+].
- When the tool magazine is fully loaded: Press [Confirm] to confirm.

7.3.2 Inserting the tool magazine

- ✓ The tool magazine is fully loaded with tools.
- ✓ The menu [Device] is active.

- In the overview [Attach], select [Tool Holders] for the tool magazine to be inserted.
- To insert the tool magazine, follow the instructions in the user interface.



- Confirm insertion of the tool magazine with [Confirm].
The tool magazine overview is displayed in the user interface.
In the menu, the inserted tool magazine is marked as [Attached].

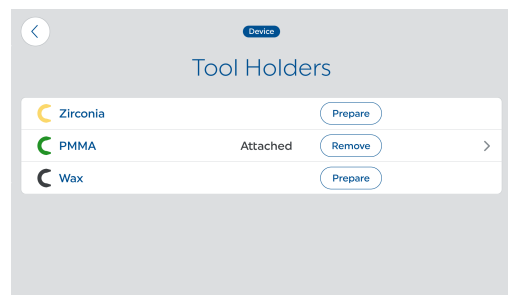
7.3.3 Changing the tool magazine

- ✓ The new tool magazine is fully loaded with tools.
- ✓ The menu [Device] is active.



In this example, the PMMA tool magazine is replaced by the Zirconium oxide tool magazine.

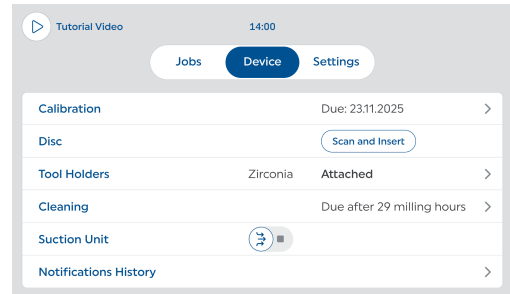
- Call up overview [Tool Holders].
- Replace the tool magazine marked as [Attached] with a tool magazine suitable for the milling job. To do this, follow the instructions in the user interface.
- To attach the tool magazine, follow the instructions in the user interface.
In the user interface, the tool magazine overview is displayed.



The currently inserted tool magazine is marked as [Attached].

4. Use the arrow button to display the [Device] menu.

In the menu, the name of the currently inserted tool magazine is displayed and marked as [Attached].



7.3.4 Changing the tool



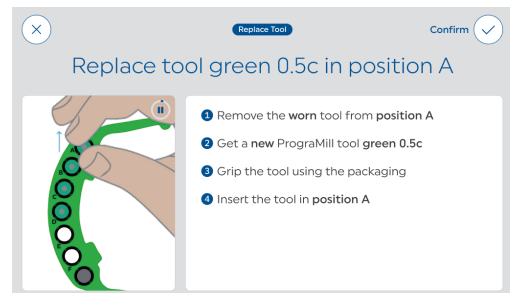
- For reasons of process safety, Ivoclar recommends changing tools immediately when the message is [Replace Tool] displayed.
- If the tool is not changed immediately, the message is displayed again after the next job. Alternatively, you can access the tool change via the menu [Device].
- The change of the tool is described using the example of the tool "green 0.5c in position A".

- ✓ The device has detected during a machining step that a tool is heavily worn. This machining step was still completed.
- ✓ The [Replace Tool] message is displayed in the user interface.

1. In the [Replace Tool] screen, press the [Now] button.
2. To replace the tool, follow the instructions in the user interface.



3. Confirm tool replacement with [Confirm].
The tool magazine is displayed.
The status of the new tool is shown as 100%.



7.4 Discs and disc holder

-  Ivoclar recommends performing all activities with the discs and the disc holder outside the milling chamber.

7.4.1 Installing the disc in the disc holder

-  • For Ivotion processing and for dimension milling jobs (oversize process), special rings are required for placing the disc: the digital denture ring and the ring with a recess. These rings are included in the accessory kit.
- The discs are fixed in the disc holder with a quick-release clamping ring.
 - Do not completely unscrew the screws on the quick release ring to prevent soiling of the threads.

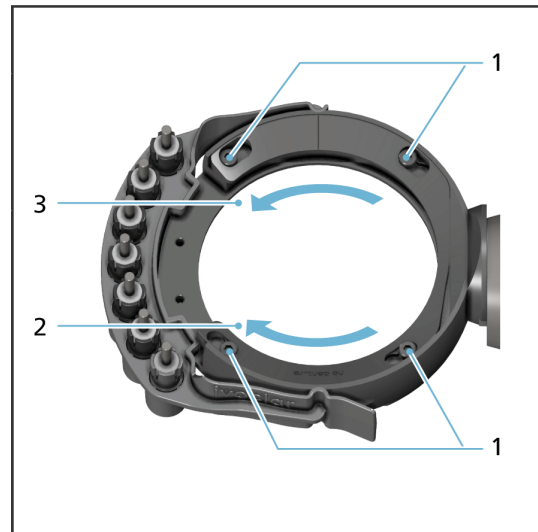


NOTICE

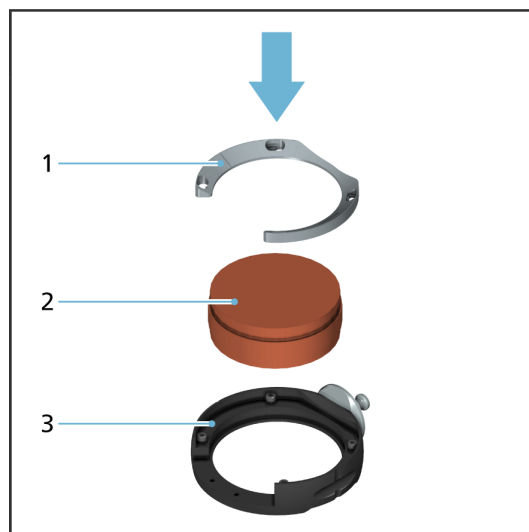
Screws of the disc holder insufficiently tightened.

- The disc falls out of the disc holder. Breakage of the tool.
 - Damage to the device.
- Make sure that the fastening screws are securely in place.

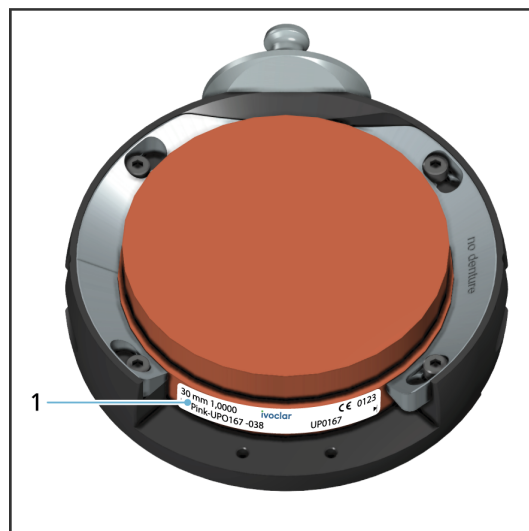
1. If required: Remove the disc holder from the device.
2. To open the quick-clamping ring: Turn screws (1) 2 to 3 turns counter-clockwise and rotate the quick-clamping ring to the left (3).
3. Remove the quick-clamping ring from the disc holder.



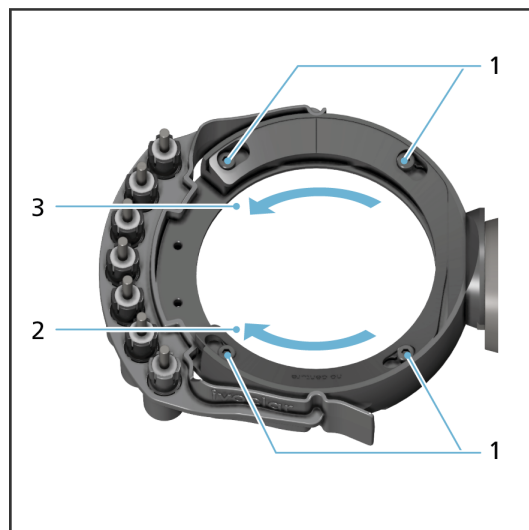
4. Insert the disc (2) into the disc holder (3).
5. Attach the quick-clamping ring (1).



6. Align the disc so that the RFID label (1) is positioned centrally in the recess of the disc holder.



7. Turn the quick-clamping ring to the right (2).





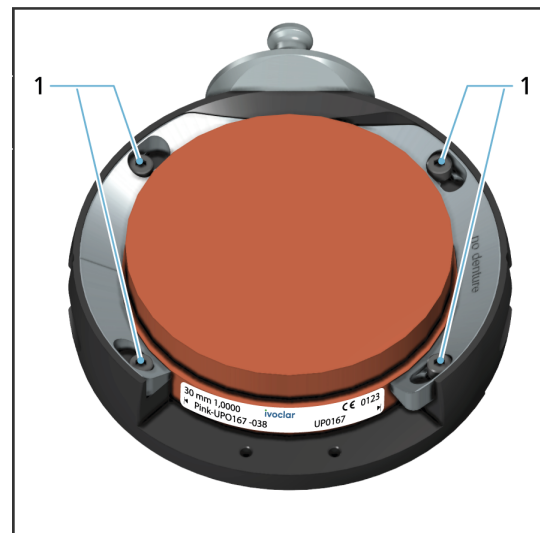
NOTICE

Screws tightened excessively.

Damage to the disc.

- ▶ Tighten the screws crosswise.
- ▶ Do not overtighten the screws.

8. Tighten the screws (1) in a cross pattern using a torque wrench:
 - A. Zirconium oxide and wax: 0,45 Nm
 - B. PMMA: 2.8 Nm



7.4.2 Scanning disc

- Hold the disc specified in the job information, with the RFID label, in front of the device's RFID reader.

An acoustic signal sounds.

Green tick: The disc has been read correctly.

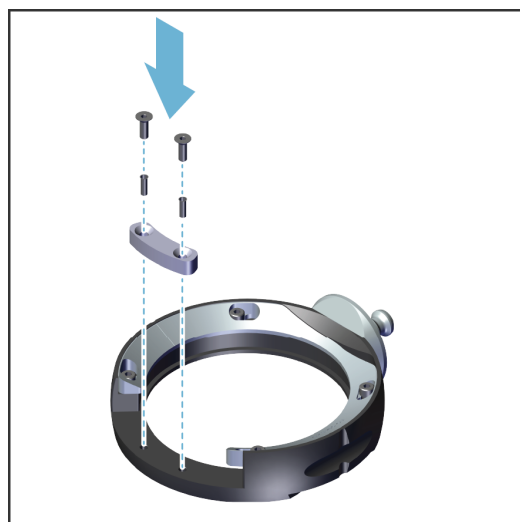
Red exclamation mark: Repeat the scanning process or replace the disc.



RFID container

An RFID container can be used if required.

- Attach the RFID container to the windowpane holder using the supplied screws.



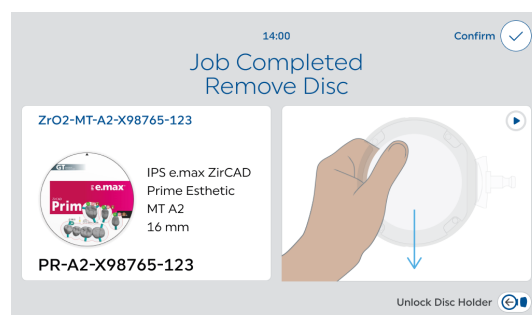
7.4.3 Removing the disc from the disc holder



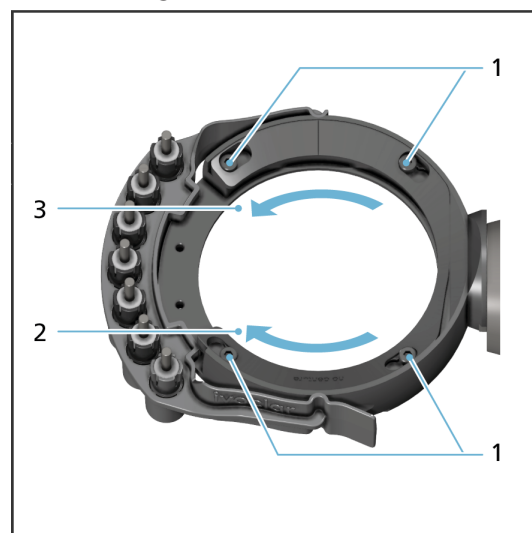
- Ivoclar recommends removing the disc holder from the milling chamber before removing the disc.
- Do not remove the screws on the quick release ring to prevent soiling of the threads.

✓ The milling job is completed.

1. Unlock the disc holder with [Unlock Disc-holder].



2. Remove the disc holder with the disc from the milling chamber.
3. To open the quick-clamping ring: Turn screws (1) 2 to 3 turns counterclockwise and rotate the quick-clamping ring to the left.
4. Remove the quick-release ring.
5. Removing the disc from the disc holder.

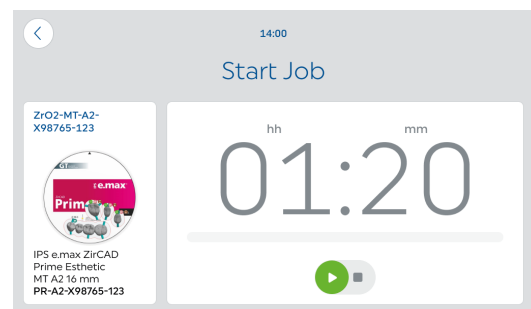
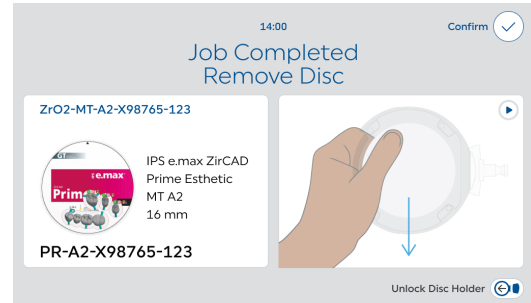


7.5 Milling jobs

7.5.1 Executing a milling job

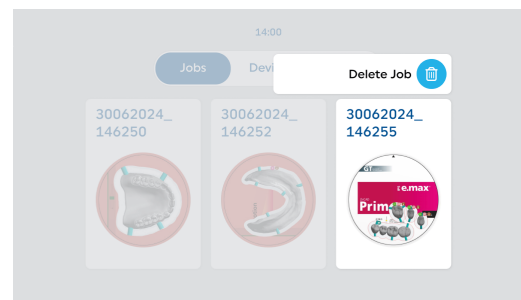
- ✓ The job has been calculated by the CAM software and is displayed in the user interface in the [Jobs] menu.
- ✓ The disc has been correctly identified by the RFID scanner.
- ✓ A disc holder with the appropriate disc is inserted in the device.
- ✓ A loaded tool magazine is mounted on the disc holder.
- ✓ The door to the milling chamber is closed.

1. To start a job, press the start button in the user interface.
The job is executed.
The display changes to [Job in Progress].
The remaining machining time is shown in hours and minutes.
After completion of the job, the display changes to [Job Completed] and the device emits a confirmation sound.
After 3 seconds, the display changes to [Job Completed – Remove Disc].
2. Unload discs. To do this, follow the instructions in the user interface.
The display returns to the [Jobs] menu.



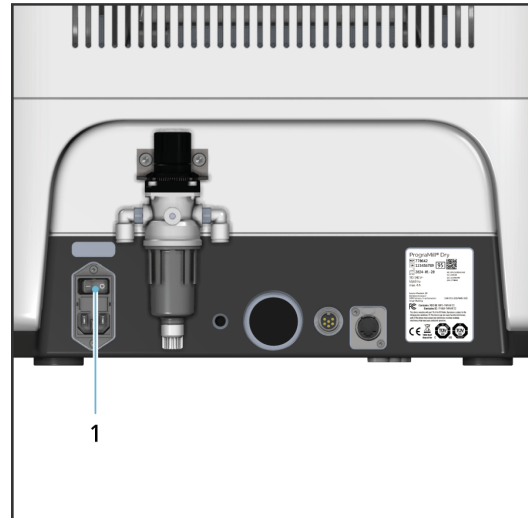
7.5.2 Deleting a milling job

- ✓ The [Jobs] menu is displayed.
1. To delete a job, press and hold the job entry in the user interface for approximately 1.5 s.
The [Delete Job] button is displayed.
 2. Press the [Delete Job] button.
 3. Confirm query [Delete Confirmation] with [Delete].
The job overview is displayed without the deleted job.



7.6 Switching off the device

- ✓ No milling job is in progress.
- To switch off the device, set the On/Off switch (1) on the rear of the device to 0.



8 Troubleshooting/Error table



The device issues warnings and prompts in the user interface to inform you about the status of your device, upcoming tasks, and any problems that have occurred. In the event of an error, first check the displays in the user interface (see chapter 8.3).

If you are unable to resolve problems yourself using the information in the user interface and the following sections, contact your authorised service partner.

8.1 Contacting Ivoclar

✓ The [Settings] menu is displayed.

1. If the machine displays an error, please contact Ivoclar Support for assistance.
2. Scan the QR code with a mobile device.
A list of contacts in your country will be displayed.



8.2 Recognising and rectifying faults

Error	Possible cause(s)	Troubleshooting
Device not starting	Power supply not connected or disconnected. Power failure.	<ul style="list-style-type: none"> • Check the power supply and re-establish it, if necessary (see chapter 5.1). • Switch on the device (again). • If the problem persists: Contact the service partner.
Switched-on device not responding to inputs in the user interface	No network connection	<ul style="list-style-type: none"> • Check the network connection and restore it if necessary. • If the problem persists: Contact the in-house technician.
	Required updates not performed	<ul style="list-style-type: none"> • Download updates (see chapter 6.1.3). • If the problem persists: Contact the service partner.

Troubleshooting/Error table

Error	Possible cause(s)	Troubleshooting
Device stops operating	Power supply interrupted. Power failure.	<ul style="list-style-type: none"> • Check the power supply and re-establish it, if necessary (see chapter 5.1). • Switch the device off and on again. Follow the instructions in the user interface. • If the problem persists: Contact the service partner.
	Device defect	<ul style="list-style-type: none"> • Contact the service partner.
Insufficient suction	Aborted restorations in the chip screen	<ul style="list-style-type: none"> • Refer to the chapter 9.3.5
No milling jobs are displayed in the job list	No milling jobs have been transmitted by "PrograMill CAM"	<ul style="list-style-type: none"> • (Re)send milling jobs to the milling machine.
	No network connection	<ul style="list-style-type: none"> • Check the network connection and restore it if necessary. • Send milling jobs to the milling machine (again). • If the problem persists: Contact the in-house technician.
Milling jobs not starting	Tasks/to-dos not completed:	
	No or incorrect tools/disc inserted for the milling job	<ul style="list-style-type: none"> • Insert suitable tool/suitable disc (see chapter 7.3.4).
	Extraction system not connected	<ul style="list-style-type: none"> • Check the extraction system (see chapter 5.2.4). • Check the extraction system settings in the user interface (see chapter 5.2.4).
	Compressed air supply not connected or incorrectly set	<ul style="list-style-type: none"> • Check the compressed air supply (see chapter 5.2.2). • Check the settings of the compressed air supply in the user interface (see chapter 5.2.2).
Milling job shows missing tool even though a tool was inserted	Wrong tool configured for the milling job	<ul style="list-style-type: none"> • Check tool magazine and slots in the user interface (see chapter 7.3.4).
	Tool inserted in the incorrect position in the tool magazine	

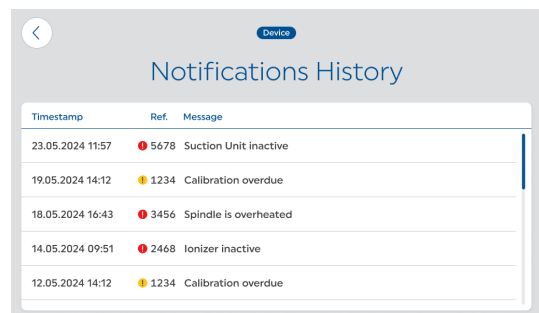
Error	Possible cause(s)	Troubleshooting
Tool broken	Tool service life exceeded	<ul style="list-style-type: none"> Eject the tool (see chapter 7.3.4). Insert suitable tool (see chapter 7.3.4). If the tool magazine cannot be removed from the device or the tools are jammed: Contact the service partner.
	Design error in CAD software	<ul style="list-style-type: none"> Check design in CAD and CAM software.
	Error in work preparation or milling path calculation in "PrograMill CAM"	<ul style="list-style-type: none"> (Re)send milling jobs to the milling machine.
Disc not detected	Discs inserted without a suitable RFID label or RFID container	<ul style="list-style-type: none"> Remove the disc holder from the milling chamber (see chapter 7.4.1).
	Zirconium oxide, PMMA, wax: RFID label damaged	<ul style="list-style-type: none"> Check disc holder, disc, RFID container or RFID label. Depending on the situation: Insert new disc, insert RFID container and insert holder back into the device (see chapter 7.5.1).
Deviations in the axis geometry	Collision	<ul style="list-style-type: none"> Perform milling of the calibration geometry (see chapter 8.4).

8.3 Prompts and warnings in the user interface

8.3.1 Viewing Message History

✓ The [Device] menu is displayed.

- [Notifications History] open.
The device displays the last 20 messages in the user interface. Older messages are deleted without warning.
Errors are indicated by a yellow symbol, warnings by a red symbol.
- Back to the [Device] menu with the arrow key at the top left.



8.4 Performing calibration

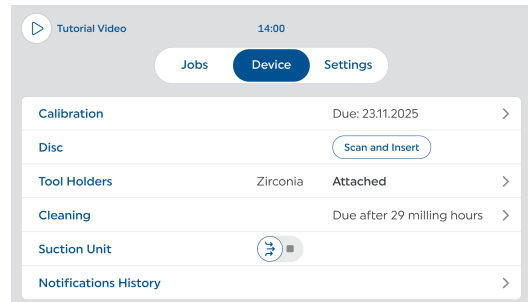


The menu [Device] next to the entry [Calibration] shows the date on which the next calibration is due. When the date is reached, a message appears asking to calibrate the device. If the device is not immediately calibrated, the request appears again after one week.

- ✓ The [Device] menu is displayed.
- ✓ A digital calliper with a measurement accuracy of 0.01 mm is available for measuring the disc thickness.

1. Start calibration using the arrow next to the date.

The [Calibration] screen is displayed.

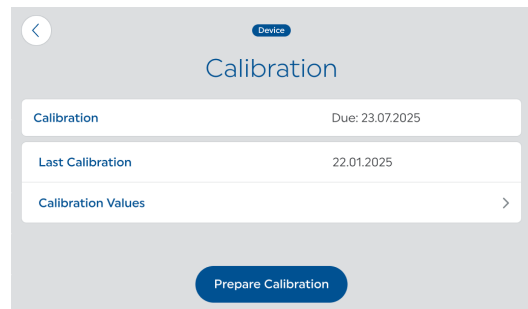


2. Start calibration using the [Prepare Calibration] button.

The [Scan disc] screen is displayed.

3. To perform calibration, follow the instructions in the user interface:

- A. Scanning disc.
- B. Insert the tool.
- C. Insert the tool magazine.



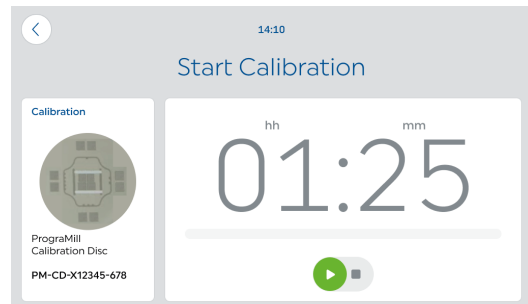
4. Start calibration using the slide switch.

The calibration is started.

In the user interface, [Calibration in Progress] is displayed.

The remaining time is shown in a count-down timer.

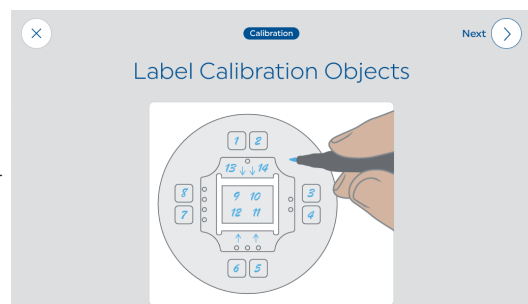
After completion of the calibration, the [Calibration completed] screen is displayed.



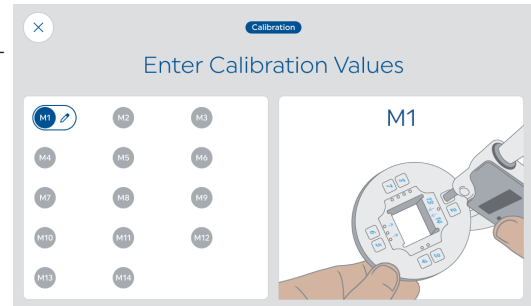
After a short time, the [Calibration completed – Remove disc] screen is displayed.

5. Unload discs. To do this, follow the instructions in the user interface.
6. Mark the disc to be calibrated. To do this, follow the instructions in the user interface.
7. Confirm with [Confirm].

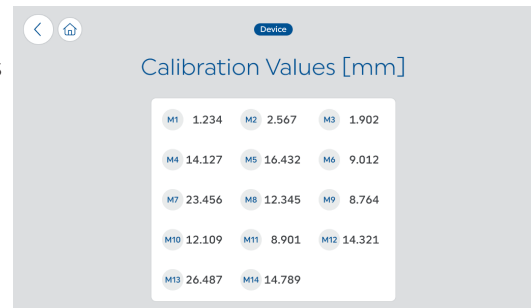
The home screen [Enter Calibration Values] is displayed.



8. Measure the thickness of the disc at the marked position. To do this, place the cleaned disc between the measuring faces of the micrometer until the ratchet slips.
9. Read the measured value and enter it as value M1 in the [Enter Calibration Values] screen using the numeric keypad.
 - A. Values in mm
 - B. 3 decimal places
 - C. Value range: 0.000 mm to 30.000 mm



10. Confirm the value with [Confirm].
The value is saved for M1 and the display advances to the entry for M2.
11. Enter values for M2 to M14 as described for M1.
After entering the value for M14, a table with all entered values is displayed.
12. Confirm table with [Confirm].
The message [Calibration in Progress] is displayed in the user interface.
After successful calibration, [Calibration] is displayed in the user interface together with the message [Successfully Completed].
In the [Device] menu, the date of the last calibration and the date of the next calibration are displayed.

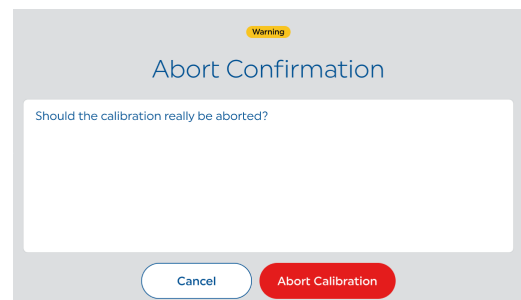


 If the values deviate greatly from the values of the last calibration, a prompt is displayed to repeat the calibration.

8.4.1 Cancelling the calibration

 If the calibration is cancelled, all values entered up to this point will be lost.

1. Cancel the calibration using the cancel icon in the top left.
Confirmation prompt [Abort Calibration] is displayed in the user interface.
2. Confirm the confirmation prompt with [Abort Calibration].
The [Calibration] screen is displayed in the user interface.



9 Cleaning and maintenance work for the operator



This chapter deals exclusively with cleaning and maintenance work carried out on the PrograMill Dry.

Information on cleaning additional components can be found in the operating instructions of the components (see chapter 1.5).

Your PrograMill Dry must be serviced at least annually according to the manufacturer's specifications. The frequency of use or the number of operating hours is decisive. Proper maintenance is the basis of high device availability, high productivity and process safety.

1. Carry out cleaning work according to the cleaning and maintenance table.
2. Document maintenance work in the enclosed service pass.
3. Document cleaning in the "Cleaning" checklist.

9.1 Cleaning and maintenance table

To ensure safe operation of your device, perform cleaning and maintenance according to the table below at the specified intervals. Also observe the prompts in the user interface.

Always prepare the device as required before carrying out any work (see chapter 9.2).

Interval	Task	Reference
daily	Cleaning the measuring probes and checking for damage	See chapter 9.3.3
	Clean the collet and spindle	See chapter 9.3.4
	Clean spindle	–
	Clean the milling chamber	See chapter 9.3
	Clean inspection window and door to the milling chamber	See chapter 9.3
weekly	Clean the disc holder mount	–
	Clean the inspection window to the milling chamber with a damp cloth	–
	Check container on the compressed air supply for water accumulation	See chapter 9.3.6
	Check tool magazine and replace if necessary	–
monthly	Clean the device housing	See chapter 9.3.7
	Check hose to the extraction system	–

9.2 Preparing for cleaning

- ▶ Ensure that the following conditions are met:
 - A. All ongoing milling jobs are completed.
 - B. The device is in standby mode.
 - C. The door to the milling chamber can be opened.
 - D. A hose with a crevice nozzle is available for suction work.

9.3 Cleaning the milling chamber and the front flap seal

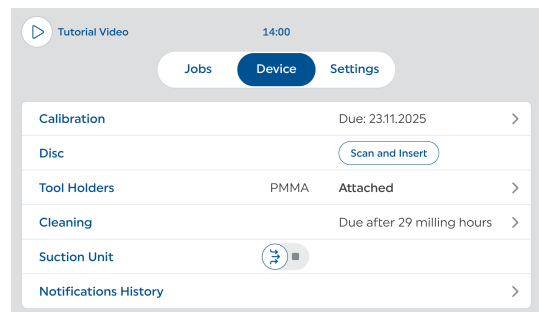


NOTICE

Improper cleaning of the milling chamber. Use of unsuitable tools or cleaning agents.

- Damage to delicate components inside.
- Damage (scratching) of the inspection window of the milling chamber flap.
- ▶ Do not wear jewellery (rings, bracelets) or watches during all cleaning work.
- ▶ Only use soft cloths, brushes or small brooms in the milling chamber, no brushes, tools or sponges with metal components.
- ▶ Only use mild, pH-neutral cleaning agents, no sharp cleaning agents containing chlorine and solvents (e.g. acetone).
- ▶ Clean the inspection window exclusively with a soft cloth, moistened with water or a mild, pH-neutral cleaning agent.
- ▶ Gently wipe surfaces without pressure for cleaning.
- ▶ Do not press, scrub, rub or mop hard while cleaning.

1. To switch on the extraction system manually, move the slide switch in the [Device] menu to the right.
2. Open the milling chamber.
3. Carefully vacuum dust and residues from the milling chamber.
4. Carefully clean the viewing window and the seal of the front cover with a soft cloth moistened with water or a mild pH neutral cleaning agents.
5. Close the milling chamber.
6. To switch off the extraction system manually, move the slide switch in the [Device] menu to the left.



9.3.1 Scheduled cleaning

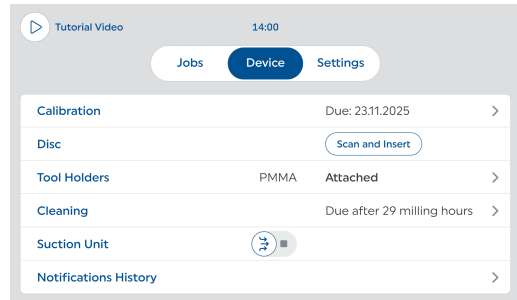
✓ The menu [Device] is displayed.



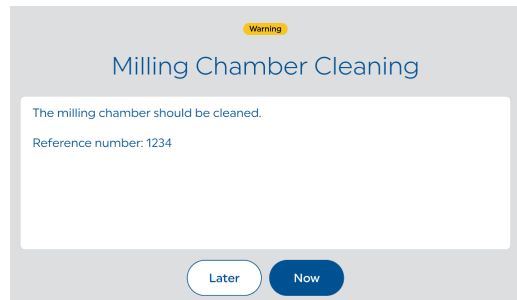
The request to clean the device appears after the end of the milling job in which the [Cleaning milling hours counter] expired.

Ivoclar recommends that the cleaning be carried out immediately when the request is displayed.

1. Start cleaning using the arrow next to the displayed remaining time.



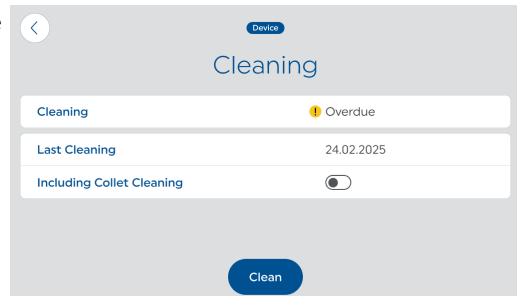
2. The home screen [Milling Chamber Cleaning] is displayed.
3. Start cleaning with the [Now] button.
The home screen [Cleaning] is displayed



4. If the collet is also to be cleaned: Push the slider switch [Including Collet Cleaning] to the right.

The [Cleaning] screen or [Clean milling chamber and collet] is displayed.

The door to the milling chamber opens a gap.

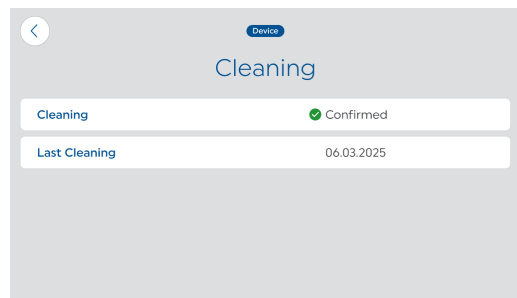


5. Start cleaning using the [Clean] button and follow the instructions in the user interface.
6. Confirm cleaning with [Confirm].

The [Cleaning] screen is displayed with a confirmation and the date of cleaning.

The [Cleaning milling hours counter] counter is reset.

7. Return to the [Device] menu using the arrow in the top left.

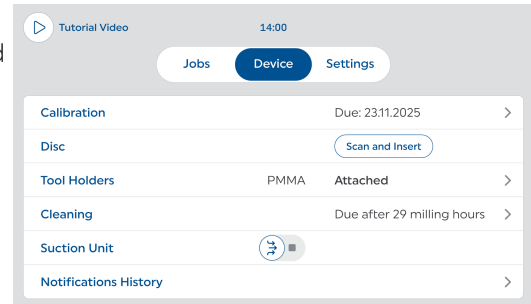


9.3.2 Cleaning as needed via the extraction system



With this function, light soiling (dust) can be removed from the milling chamber if necessary.

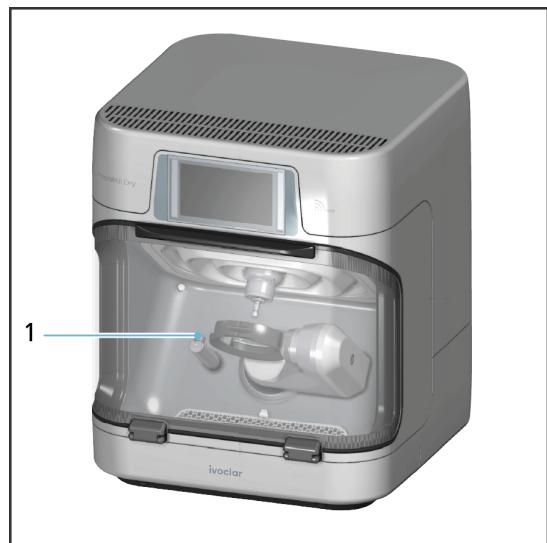
- In the [Device] menu under [Suction Unit], switch the extraction system on and off using the slide switch.



9.3.3 Cleaning the measuring probes

The probe in the milling chamber may become contaminated, e. g. with milling dust.

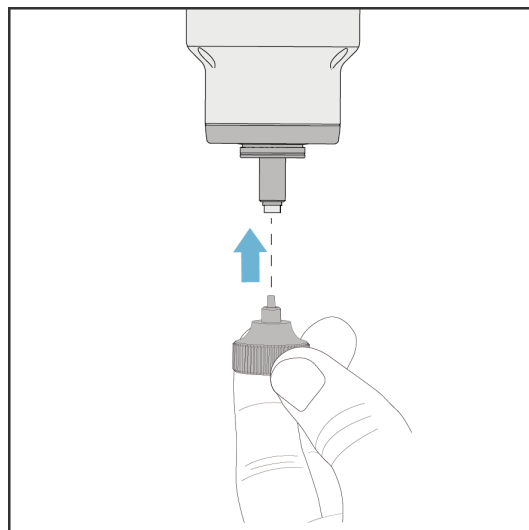
- ✓ The device is ready.
- ✓ The tool magazine has been removed from the device.
- Carefully clean the probe (1) with a brush.



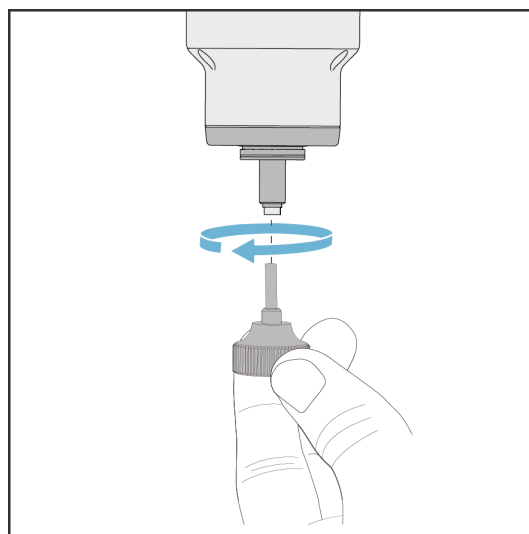
9.3.4 Cleaning the collet

✓ The device is ready.

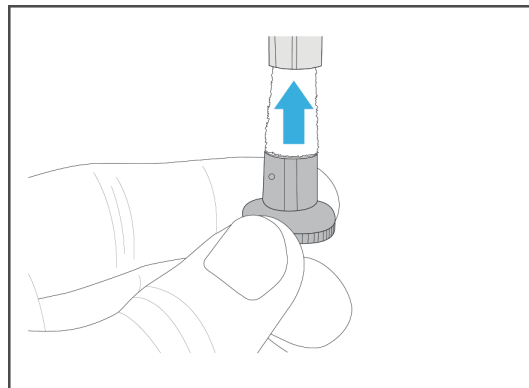
1. Follow the information in the user interface.
2. Open the milling chamber.
3. Place the collet wrench from the Spindle Service Set onto the collet.



4. Unscrew the collet by hand using the collet wrench.



5. Clean the internal cone of the spindle using the spindle cleaning cone from the spindle service set.

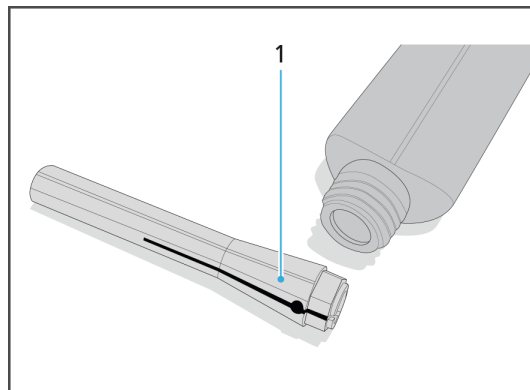


In the following step, make sure that the seals do not fall out of the collet.

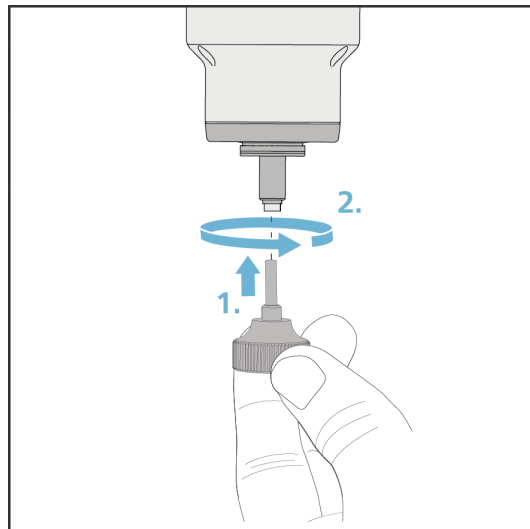
6. Clean and degrease the collet using the brush from the spindle service set.



7. Apply a small amount of collet grease from the spindle service set to the flanks of the collet (1).



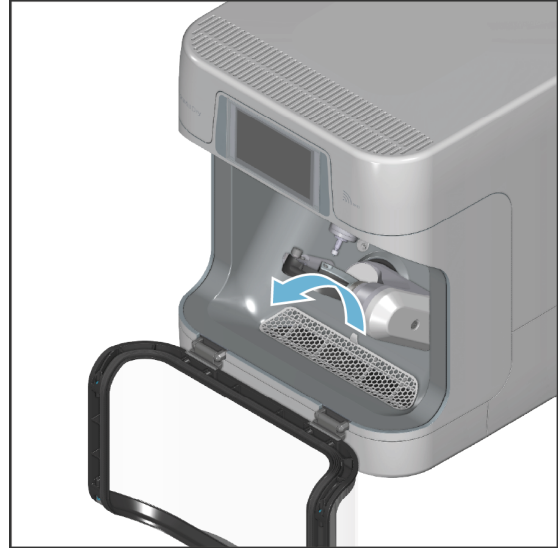
8. Insert the collet into the spindle.
9. Screw the collet into the spindle by hand using the collet key until it stops.
10. Follow the information in the user interface.
11. Close the milling chamber.



9.3.5 Cleaning the chip screen

The collection sieve captures dirt and restorations so that they do not enter the extraction system.

- Remove and clean the collection sieve if required.



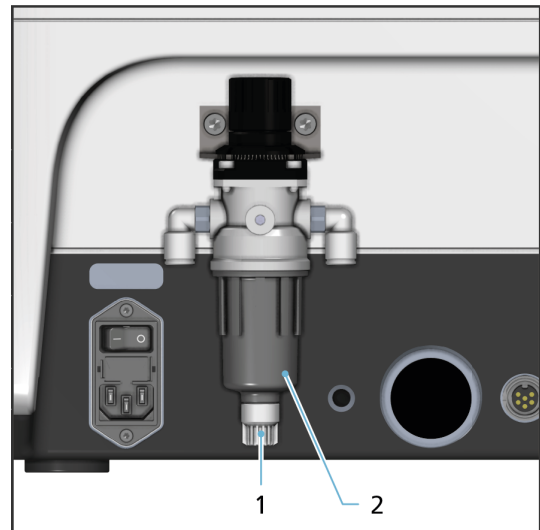
9.3.6 Maintaining the compressed air supply

- ✓ The device is ready.
- ✓ A beaker-sized collection container is provided.

1. Check the water separator (2) in the compressed air supply for any accumulation of liquid.

If there is liquid in the water separator:

2. To avoid uncontrolled water leakage: Depressurise the device.
3. Hold a collection container under the compressed air supply.
4. Open the drain screw (1) on the water separator.
5. Collect and dispose of the liquid.
6. Tighten the drain screw on the water separator.



9.3.7 Cleaning the housing

WARNING

Improper cleaning of the device. Live components come into contact with moisture. Live components are exposed.

- Risk of electric shock.
 - Damage to the device.
 - ▶ Never remove the housing.
 - ▶ Ensure that no liquids or objects enter the device.
-



NOTICE

Improper cleaning of the milling chamber. Use of unsuitable tools or cleaning agents.

- Damage to delicate components inside.
 - Damage (scratching) of the inspection window of the milling chamber flap.
 - ▶ Do not wear jewellery (rings, bracelets) or watches during all cleaning work.
 - ▶ Only use soft cloths, brushes or small brooms in the milling chamber, no brushes, tools or sponges with metal components.
 - ▶ Only use mild, pH-neutral cleaning agents, no sharp cleaning agents containing chlorine and solvents (e.g. acetone).
-

- ✓ The device is ready.
- ▶ Wipe the housing with a soft cloth moistened with tap water and a mild, pH-neutral cleaning agent.

9.3.8 Changing the filter of the extraction system



The device reports a required filter change in the following way:

- During the milling job, an acoustic signal sounds every 3 minutes for a quarter of an hour.
- The user interface shows a message explaining the cause of the sound and prompting to change the filter.

1. Confirm the message in the user interface [Explanation Suction unit beeps].

The acoustic signal stops.

The message is no longer displayed.

The job is completed.

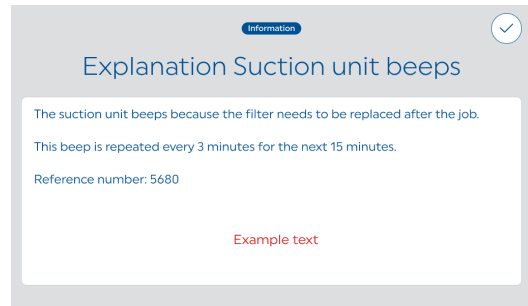
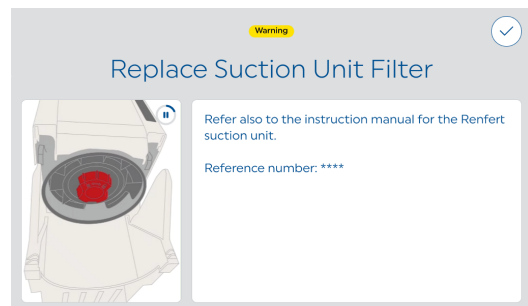
2. Remove the disc holder with the disc and confirm removal.

3. Close the milling chamber door.

The display changes to [Replace Suction Unit Filter].

4. Change the filter. Follow the information in the user interface.

5. Confirm filter replacement.



10 Decommissioning

10.1 Shutting down the device



To disconnect the device from the power supply, unplug it from the socket, not from the device.

✓ All active milling jobs have been successfully completed.

1. Switch off the device.
2. Disconnect the device from the power supply.
3. Make sure there is no liquid in the device.
4. Remove all cables and hoses.
5. Clean the device.
6. Install transport protection.
7. Pack the device appropriately, e. g. in the original packaging.

10.2 Storing the device

1. Ensure that the storage area meets the following conditions:
 - dry
 - vibration-free
2. Ensure that storage conditions are complied with (see chapter 12.3.1).

10.3 Disposing of the device



The operator is responsible for proper disposal. The product must not be disposed of with household waste. It must be collected separately from household waste and disposed of in an environmentally friendly manner in accordance with local regulations for the disposal of electronic devices, or returned to Ivoclar for disposal.

11 Repairs

DANGER

Improper repairs/work on the device.

Risk to the user.

- Repairs that are not explicitly permitted to be carried also out by other persons, should be carried out by a service partner authorised by Ivoclar according to the latest version of the service instructions.

11.1 Authorised service partners

-  Information about the authorised service partners in your country can be obtained from your local sales partner or from Ivoclar at: www.ivoclar.com.

11.2 Sending in defective devices

-  For transport, only use the original packaging with the corresponding foam inserts.
 1. Shut down the device before returning it to an authorised service partner (see chapter 10).
 2. Reattach the transport restraints.
 3. Send the device to the authorised service partner in suitable packaging (e.g. original packaging).

11.3 Replacing wear and spare parts

-  You can find order information for the wear and spare parts in the appendix (see chapter 13.1).

11.3.1 Replacement intervals

Wear parts are subject to unavoidable wear during operation. The reliable operation of the device depends largely on replacing wear parts at the intervals specified in the table below.

Replacement intervals do not apply to spare parts.

Wear part	Interval	Exchange by
Tool clamping sleeve	min. annually	User/operator
Membrane	2000 operating hours	Certified Ivoclar technician
Spindle element	2000 operating hours	Certified Ivoclar technician

11.3.2 Authorisations for replacement



Contact your Ivoclar contact if you need training.

Who	Wear/replacement part	Information on installation and removal in these instructions
Certified Ivoclar technician	A/B axis	–
	Toothed belt	–
	Axle portal	–
	Electronics	–
	Wiring harness	–
	Pneumatics	–
	Milling chamber lighting	–
Operator/user or electrical specialist with training by Ivoclar	Spindle	
	Membrane	–
	Front door including seal	–
	Measuring probe	–
	Ioniser	–
	Display	–
User/operator	Tool clamping sleeve	See chapter 11.3.3
	Collet	–
	Pre-filter	See chapter 11.3.3
	Tool magazine	–

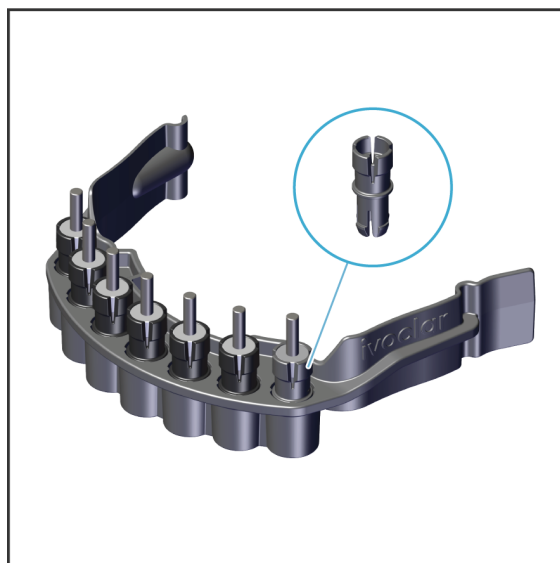
11.3.3 Replacing tool clamping sleeve

The tool clamping sleeve collects the tools in the PrograMill Dry.



The tool item no. 754497 is required to replace the tool clamping sleeve.

- Replace the tool clamping sleeves if required, and at the latest in the event of damage or during the annual maintenance.



11.3.4 Replacing the filter cartridge in pre-filter



Replace the filter cartridge depending on the load (oil quantity in the system, humidity), at the latest after 2 years.

For trouble-free operation of the device, the use of a pre-filter for compressed air is recommended. The pre-filter is available as an accessory (item no. 766902). The filter is integrated into the compressed air system between the machine and the compressor. It cleans the compressed air of contaminants such as oil, water and foreign particles, thereby increasing the service life and availability of the system. The filter cartridge in the pre-filter ensures this function.

1. To replace the filter cartridge, open the pre-filter.
2. Replace the filter cartridge with a new cartridge.
3. Close the pre-filter.



12 Technical Data



The following technical data refer exclusively to the PrograMill Dry.

Refer to the respective owner's manual for technical information on accessories or other components of the PrograMill Dry.

12.1 Classifications

Categories	Value
Test standards	The EC Declaration of Conformity can be found in the Ivoclar download area at: https://www.ivoclar.com/en_EN/download-center/
Noise emissions	<p>Measurement conditions:</p> <ul style="list-style-type: none"> • Tool (service life already expired) • Measuring distance to sound source: 1 m • Measurement according to ISO 3746, accuracy class 3 <p>Under measurement conditions: 70 dB(A) All other operating conditions (tool change, axis movement, etc.): 70 dB</p>

12.2 Dimensions, weights

Categories	Value
Height × width × depth	616 mm × 510 mm × 594 mm
Weight	ca. 53 kg

12.3 Environmental conditions

12.3.1 Environmental conditions during storage and transport

Category	Value
Permissible ambient temperature	−20 °C to +65 °C
Max. relative humidity	80 %
Permissible ambient pressure	500 mbar to 1060 mbar

12.3.2 Environmental conditions during operation

Category	Value
Permissible ambient temperature	+5 °C to +40 °C
Max. relative humidity	80% for temperatures up to 31°C, gradually decreasing to 50% at 40°C
Permissible operating height	2,000 m a.s.l. M
Use indoors:	
Degree of pollution	2 - PD2
Overvoltage category	2 - OC2

12.4 Electrical data

Category	Value
Mains voltage	100–240 V~, 50/60 Hz
Permissible voltage fluctuations	±10 %
Max. current consumption	4 A
Network fuses	T4A 250 V/5 x 20 mm

12.5 Compressed air data

Category	Value
Compressed air consumption	80 l/min
Operating pressure	Min. 6.5 to 7 bar; max. 8 bar
Quality	Oil- and water-free in accordance with ISO 8573-1
Solid particles	Class 3. Filter grade better than 5 µm for solids



The class is maintained using an air dryer (IDF series), air filter (AF/AFF series) and microfilter (AFMM/AM series).

12.6 Network Interfaces

Network Interface	Function
Ethernet	<ul style="list-style-type: none">• Connection of the device to local network (LAN) via IPv4 (Internet Protocol Version 4)• Automatic network configuration of the device via DHCP (Dynamic Host Configuration Protocol)• Transmission of milling orders from a CAM system to the device via OPCUA (Open Platform Communications Unified Architecture)• When you connect the device to the internet: Automatic synchronisation of date and time via NTP (Network Time Protocol) Procurement of system updates (provided by Ivoclar)
RFID	<ul style="list-style-type: none">• On the device: Registration of Ivoclar discs using RFID labels and RFID containers Errors in the production process are reduced. The data on the RFID tag is encrypted and can only be used in the Ivoclar workflow.

13 Appendix

13.1 Ordering spare parts

1. Have the following information ready for ordering spare parts:
 - Item number
 - Serial number
2. Contact the authorised service partners.

13.2 Scope of delivery

Item description	Item number
PrograMill Dry System	770642
PrograMill Dry System (N)	770643
Spindle Service Set	689252
Power Cable	–
Network Cable	–
Compressed air hose	–
PrograMill tool green 2,5c	689047
PrograMill tool green 1,0	689048
PrograMill tool green 0,5	689049
PrograMill tool green f1,5	689046
Operating Instructions PrograMill Dry DE (digital)	770646
Denture Ring pos.	689245
Denture Ring neg.	749658
Disc Holder	689242
Tool Magazine Yellow	772896
Tool Magazine Green	772917
Tool Magazine Black	772918
Torque wrench 0,45 Nm	697430
Calibration Set Dry 1 × Digital micrometer 3 × Calibration disc	747808
Cleaning brush	–

13.3 Recommended additional accessories

Item description	Item number
PrograMill CAM PC	691691
Silent Power CAM incl. hose and cable	772515
Silent Compact CAM incl. hose and cable	772511
PrograMill CAM Set incl. RFID Reader	691953
Widescreen monitor 22"	697508

Item description	Item number
Control cable for suction unit PrograMill Dry	772527
Disc Manager	772409
PrograMill Dry Base	772408
PrograMill Oil Filter	766902
Tool for changing the collet	754497

13.4 Approved tools



NOTICE

Use of unsuitable tools.

Damage to the device.

- Only use the tools recommended in this manual and by Ivoclar



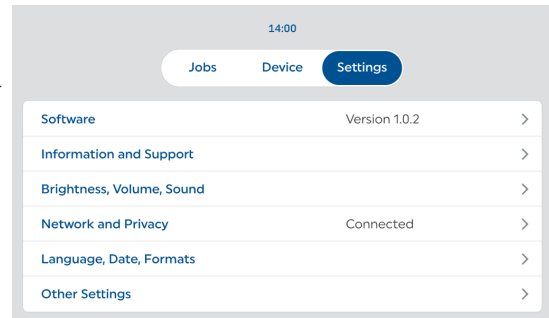
- Material and areas of application correspond to the time of printing. For more information, please visit: <http://www.ivoclar.com>.
- The number in the product description represents the shaft diameter in millimetres.
- Coated tools for longer service life are labelled with the letter c (for "coated").

Item description	Item number
PrograMill tool yellow 2.5	689039
PrograMill tool yellow 1.0	689040
PrograMill tool yellow 0.5	689041
PrograMill tool yellow 2.5c	689036
PrograMill tool yellow 1.0c	689037
PrograMill tool yellow 0.5c	689038
PrograMill tool green f1.5	689046
PrograMill tool green 2.5c	689047
PrograMill tool green 1.0c	689048
PrograMill tool green 0.5c	689049
PrograMill tool black f1.5	689050
PrograMill tool black 2.5	689051
PrograMill tool black 1.0	689052
PrograMill tool black 0.5	689053

13.5 Support

✓ The user interface displays the [Settings] menu.

- ▶ Use the arrow key next to the entry [Information and Support] to display a QR code that links to an overview of authorised service partners
 - or –
 - Contact Ivoclar by telephone via +800 7000 7080.
 - or –
 - Contact us by email at customer-care.emea@ivoclar.com.



13.6 EC declaration of conformity

The EC Declaration of Conformity can be found in the download area of Ivoclar at:
https://www.ivoclar.com/en_EN/downloadcenter/



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